ZYTRONIC
The world at your finger tips

ZXY100/110

PROJECTED CAPACITIVE ZXY100/110®
TOUCH CONTROLLER & SENSOR
INTEGRATION MANUAL

VERSION 2

ZYTRONIC PROJECTED CAPACITIVE ZXY100/110® TOUCH CONTROLLER & SENSOR

INTEGRATION MANUAL – ISSUE 2

USER MANUAL ISSUE RECORD

ISSUE NUMBER
Issue 2

RELEASE DATE
8th June 2016

COMMENTS
Disclaimer added to Integration section regarding modification of flexible cable joint

EXPLANATION OF SYMBOLS USED WITHIN THIS MANUAL

Warning Hazardous Voltage.

Caution - item is susceptible to electrostatic discharge (ESD) damage
if proper precautions are not taken.

/arning - modification may result in invalidation of the Zytronic warranty

1.
INTRODUCTION

INTRODUCTION

SHIPPING DAMAGE

On receipt of your Zytronic Projected Capacitive ZXY100/110® Touch Controller Touchscreen Product, if you notice damage to the shipping carton, or concealed damage, be sure to save all packing materials for later inspection by the carrier, who is responsible for any shipping damage.

WARRANTY

If failure occurs during the warranty period of the product, please contact the point of sale from which the product was purchased.

CARE AND CLEANING

Handle the touchscreen with care prior to and during installation. Do not pull or stress cables/flexible cables and ensure no damage is caused to the touchscreen prior to installation. Clean the touchscreen surfaces with a glass cleaning solution and soft lint-free cloth. Ensure that the surfaces are clean and dry before integration of the touchscreen.

Industry standard Anti-static procedures for electronic equipment must be followed when handling the touchscreen sensor and controller PCB during all stages of unpacking and installation of the product to prevent damage to the product due to high levels of ESD.

UNPACKING YOUR TOUCHSCREEN

Ensure that the following items are present and in good condition:
Zytronic Projected Capacitive ZXY100/110® Touch Controller(s) and touchscreen sensor(s).

Users can download the latest Zytronic Projected Capacitive ZXY100/110® Touch Controller Touchscreen Driver / Configuration Software and User Manual directly from the Zytronic website. www.zytronic.co.uk/support

BEFORE YOU BEGIN

Before proceeding with the touchscreen installation ensure the following:

• Your Windows operating system is correctly installed and operating with your mouse.

• Ensure that all other touchscreen manufactures Driver Software/old touchscreen Driver software is uninstalled from the host computer to avoid software conflicts.

• Ensure that there is a free USB or Serial port available on the host computer to connect the desired Zytronic Projected Capacitive ZXY100/110® Touch Controller Touchscreen.

• Ensure that Industry standard Anti-static procedures for electronic equipment are followed during unpacking and installation of the product.

2.
CONTROLLER VARIANTS

CONTROLLER VARIANTS

The Zytronic Projected Capacitive ZXY100/110˚ PCT Self Capacitive Touch Controller range consists of 5 distinct variants: 3x ZXY100˚ controllers with either USB or Serial connectivity; and 2x ZXY110˚ controllers with USB only connectivity. See Table below.

Both ZXY100˚ and ZXY110˚ controllers will work in either single or dual touch mode (depending on the Operating System used). The ZXY110˚ controller provides additional electromagnetic compatibility (EMC) noise immunity for applications where surrounding electromagnetic interference (EMI) is a problem.

FIGURE 1   32 INPUT ZXY100/110® USB CONTROLLER FOR SMALL SENSOR SIZES

FIGURE 2   64 INPUT ZXY100/110® USB CONTROLLER FOR MEDIUM SENSOR SIZES

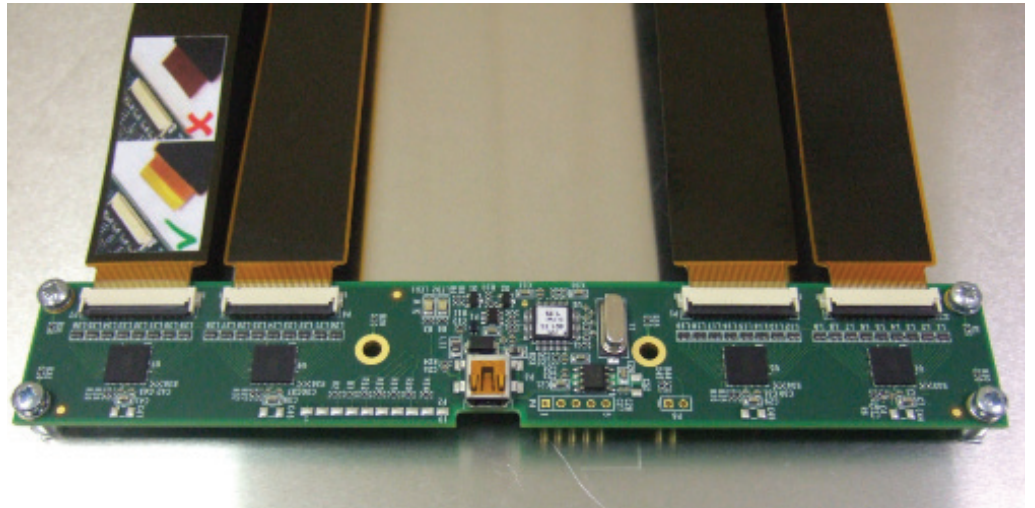|	ZXY100® CONTROLLER		ZXY110® CONTROLLER
SENSOR SIZE	USB	SERIAL	USB
5 – 18˝	ZXY100-U-OFF-32	ZXY100-S-OFF-32	ZXY110-U-OFF-32
19 – 47˝	ZXY100-U-OFF-64	ZXY100-S-OFF-64	ZXY110-U-OFF-64
48˝+	ZXY100-U-OFF-128	ZXY100-S-OFF-128	N/A

FIGURE 3   128 INPUT ZXY100® USB CONTROLLER FOR LARGE SENSOR SIZES

For USB versions, a USB cable with mini-B plug is required. Serial versions require a Serial cable with a Molex type connector, as specified in the Serial Cable drawing in section 10.0.

FIGURE 4   MOLEX CONNECTOR USED ON SERIAL CONTROLLERS

3.
INTEGRATING
THE SENSOR

INTEGRATING THE SENSOR

To integrate the sensor, you will require a suitably sized LCD with a display area close to the active area of the sensor, as shown in Figure 5 (the active area of the sensor can be found on the corresponding Zytronic sensor drawing). Where possible, it is advisable to have the active area of the sensor 2-3 mm oversized on all four edges in relation to the LCD display area. This will allow for some misalignment during integration.

FIGURE 5   SUITABLE LCD TO MOUNT THE SENSOR TO

Foam gasket should be used around the perimeter of the LCD to provide an air gap between the LCD face and the rear of the sensor, as shown in Figure 6. This air gap is necessary to prevent excessive electrical noise from the LCD causing interference to the sensor.

Guidelines for the required thickness of the gasket can be seen in the table below and are sufficient for most LCDs. Some LCDs with very high levels of noise may require greater spacing which would need to be determined by testing.

SENSOR SIZE	GASKET THICKNESS
5 – 22″	3mm
22 – 32″	4mm
32 – 46″	6mm
46 – 65″	8mm
65 – 84″	10mm

FIGURE 6   FOAM GASKET APPLIED TO LCD TO PROVIDE AIR GAP BETWEEN LCD AND SENSOR

If the sensor is only to be fitted to the LCD temporarily and kept horizontal, a single sided, electrically non-conductive, low performance gasket can be used, such as EPDM (Ethylene Propylene Diene Monomer) foam sealing strip, as shown in Figure 7. For permanent applications, or where the weight of the sensor is to be held only by the gasket, a higher performance gasket such as 3M VHB tape can be used. This will normally require the gasket to be built up to the correct thickness with several layers.

Different VHB tapes are available depending on the material of the surfaces it is adhering to. Any gasket used must be non-sulphurous and maintain its adhesion at any temperature that it may be subjected to in service.
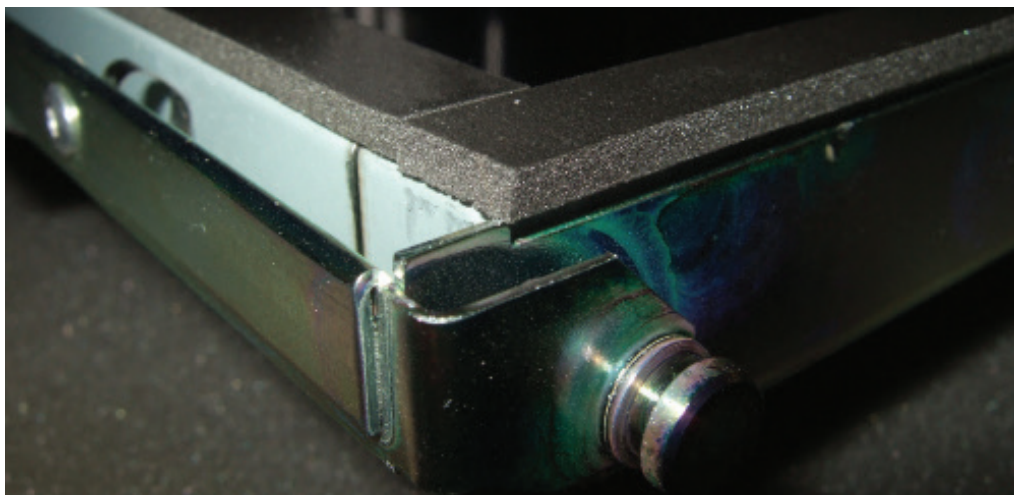
FIGURE 7   GASKET APPLIED TO THE LCD PERIMETER

The sensor should be positioned on the LCD with the sensor active area (as defined on the Zytronic product drawing) centred on the LCD display area. The glass face (with 'Viewing Face' label) should be visible, as shown in Figure 8. The sensor can be positioned as shown or rotated by 180 degrees (so that the flexible cables are on the top edge). The position should be chosen which gives the best clearance for mounting the controller PCB on the rear of the LCD.

Sensor designs are also available with the flexible cables in alternative positions. If required, the sensor can be cleaned on the front (glass) face and rear (polyester) face with a glass cleaning solution and a soft lint-free cloth.
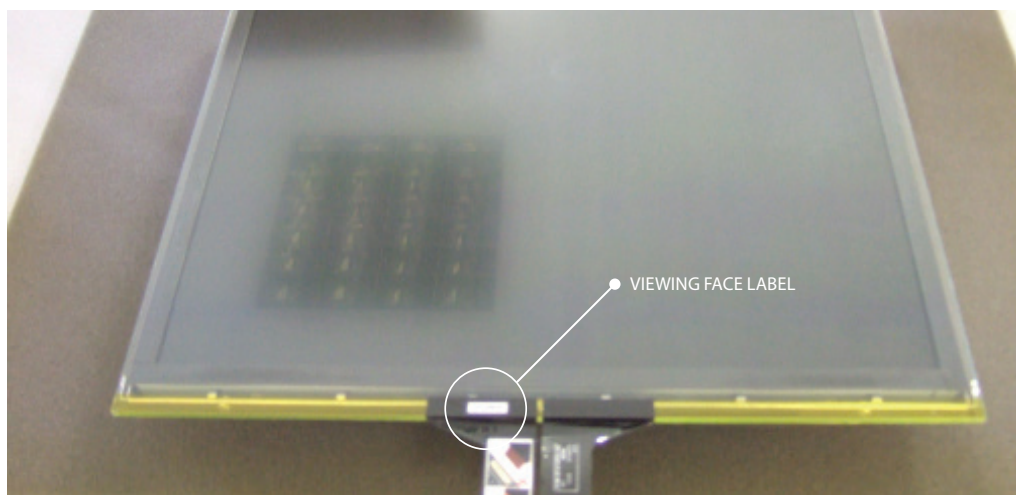
FIGURE 8   SENSOR MOUNTED ONTO LCD WITH GASKET

Zytronic do not recommend the application of gasket, sealants or adhesives directly over the flexible cable joint area of the touch sensor, or the modification/removal of the pre-applied strengthening tape at the joint. Any evidence of such modification may result in invalidation of the Zytronic warranty. If you have any questions regarding this subject, please contact Zytronic Technical Support for further advice: http://zytronic.co.uk/support/

4.
INTEGRATING THE CONTROLLER PCB

INTEGRATING THE CONTROLLER PCB

The components on the rear of the LCD should be arranged to allow a suitable space for the controller PCB, as shown in Figure 9.
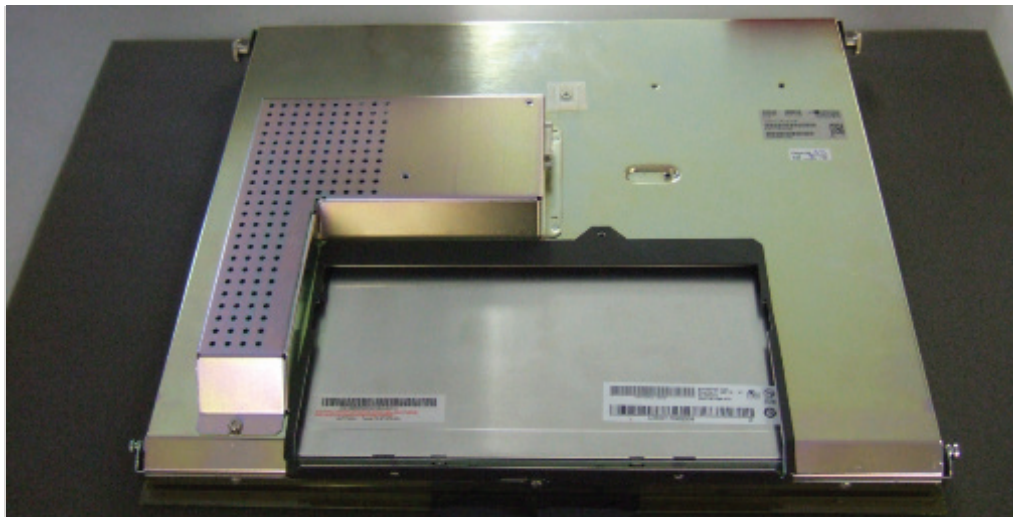
FIGURE 9   REAR OF LCD READY FOR CONTROLLER MOUNTING

The controller PCB should be positioned so that the flexible cable(s) can reach their respective ZIF socket(s) without crossing over other cables or PCBs. There should also be sufficient space around the USB socket to attach the cable. Ideally avoid placing the controller within ~30mm of other PCBs and cables, as shown in Figure 10.

FIGURE 10   CONTROLLER POSITION ON REAR OF LCD
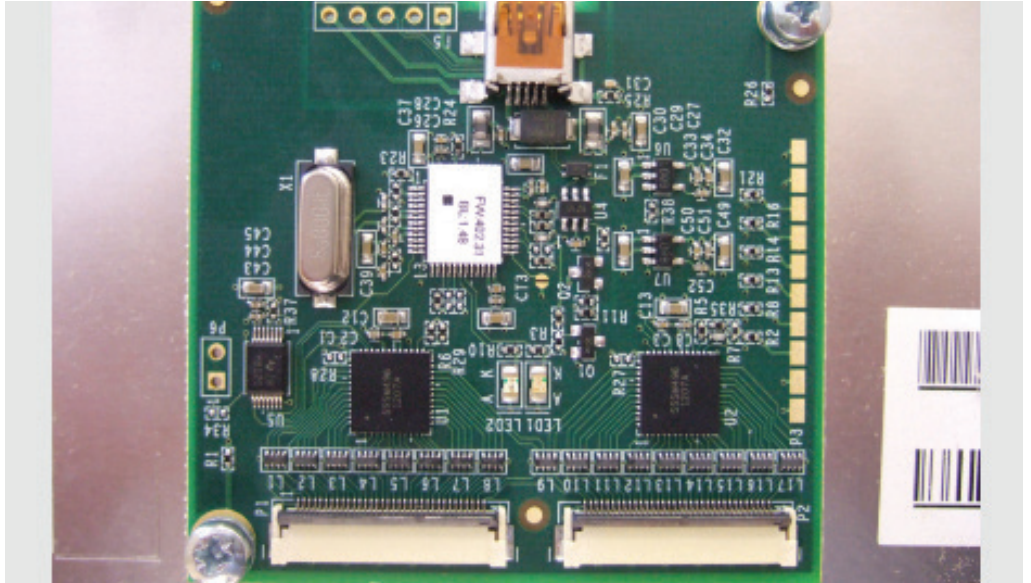
FIGURE 11   CONTROLLER PCB

The controller should ideally be mounted to metal standoffs pre-fitted to the metal chassis so that there is a good low impedance ground connection between the controller PCB and LCD metal chassis, as shown in Figure 12. The controller PCB should be spaced at least 5mm away from the metal chassis.

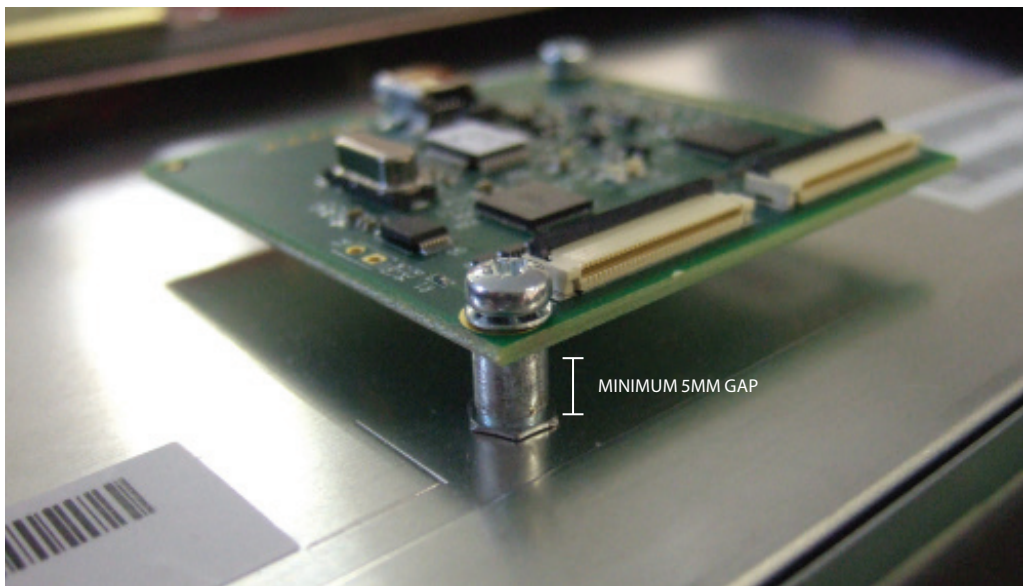CONTROLLER SPACED 5MM ABOVE METAL WORK AND GROUNDED

MINIMUM 5MM GAP

FIGURE 12   TO METAL CHASSIS VIA METAL STANDOFFS

If mounting via metal standoffs is not possible, double sided gasket pads can be used. The controller PCB should still be spaced at least 5mm away from the mounting surface, as shown in Figure 13. Any gasket used must maintain its adhesion at any temperature that it may be subjected to in service.

MINIMUM 5MM GAP
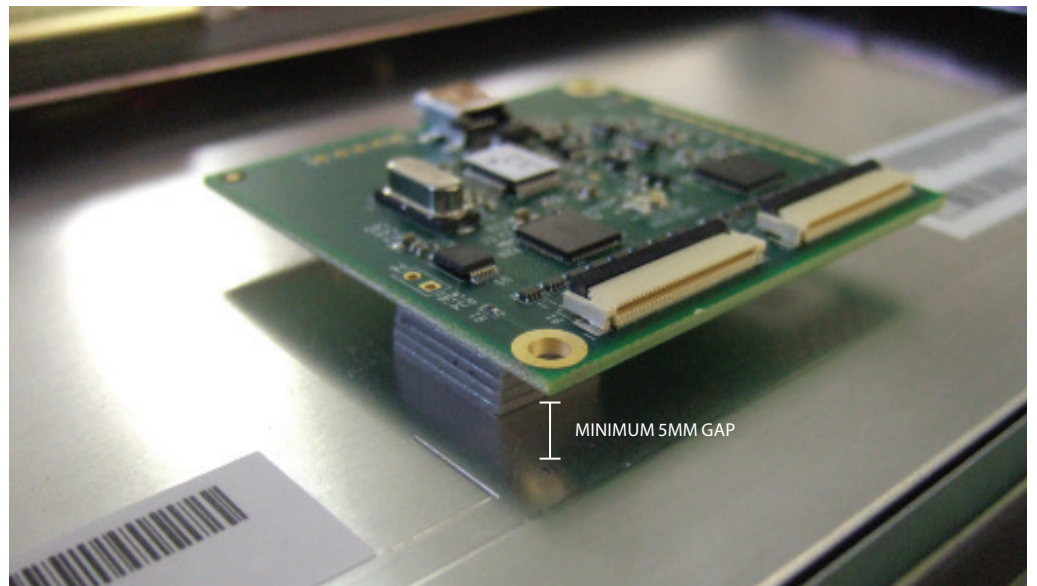
FIGURE 13   DOUBLE SIDED GASKET PADS MOUNTING OPTION

If gasket pads are used to mount the controller PCB, a separate ground connection from one of the controller PCB screw holes must be made to the LCD chassis using a low impedance ground cable, as shown in Figure 14.
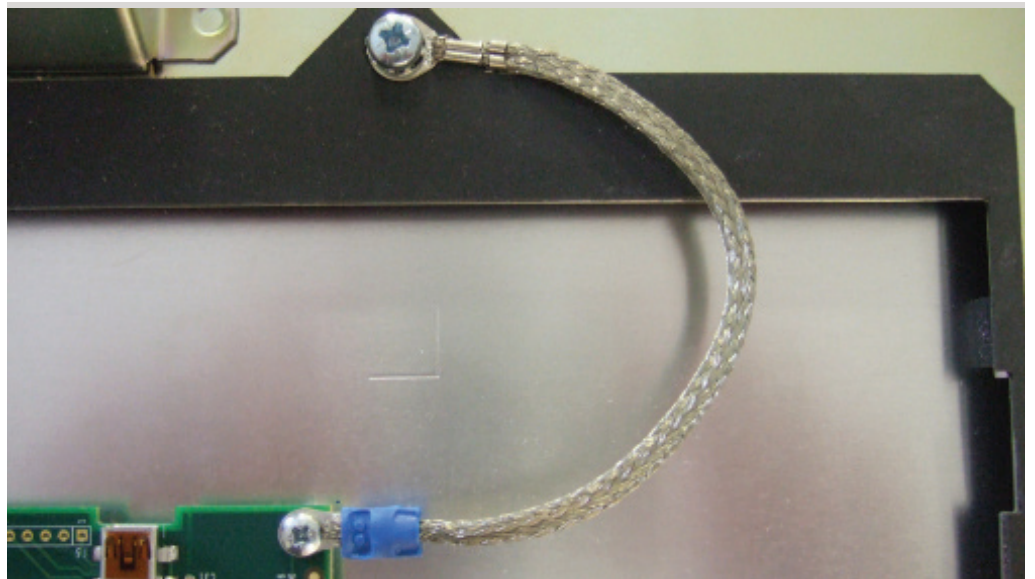

FIGURE 14   LOW IMPEDANCE GROUNDING CABLE

5.
ATTACHING THE SENSOR FLEXIBLE CABLES

ATTACHING THE SENSOR FLEXIBLE CABLES

The flexible cable bend radius at the sensor edge, and along the cable length, should be a minimum of 2.5mm, as shown in Figure 15.

FIGURE 15   FLEXIBLE CABLE BENDING AT SENSOR EDGE

The flexible cables should be plugged into the controller PCB, as shown in Figure 16.

FIGURE 16   FLEXIBLE CABLES PLUGGED INTO THE CONTROLLER PCB

The gold contact side of the flexible cable should be visible, as depicted on the label shown in Figure 17.
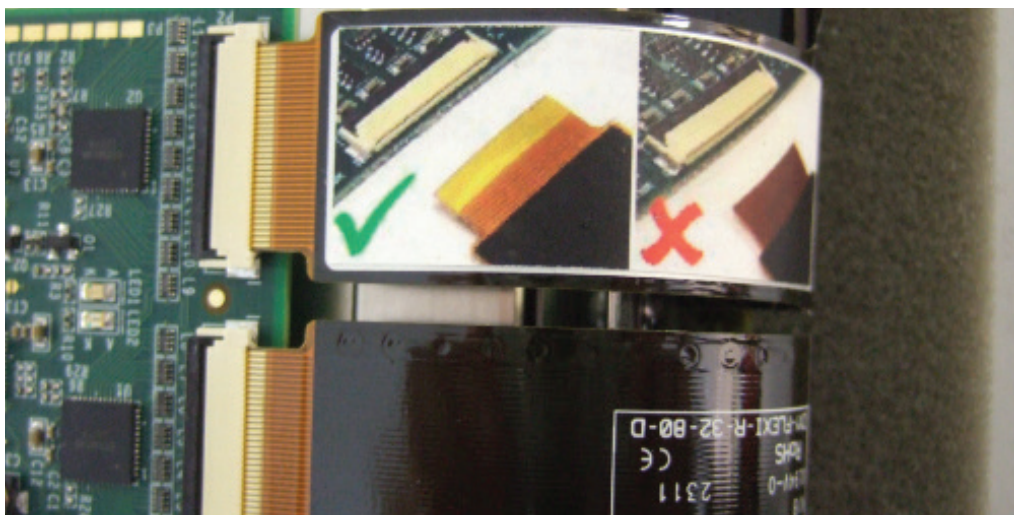
FIGURE 17   LABEL SHOWING STANDARD FLEXIBLE CABLE INSERTION ORIENTATION

Care should be taken to ensure the flexible cables are fully inserted into the ZIF sockets, as shown in Figure 18.
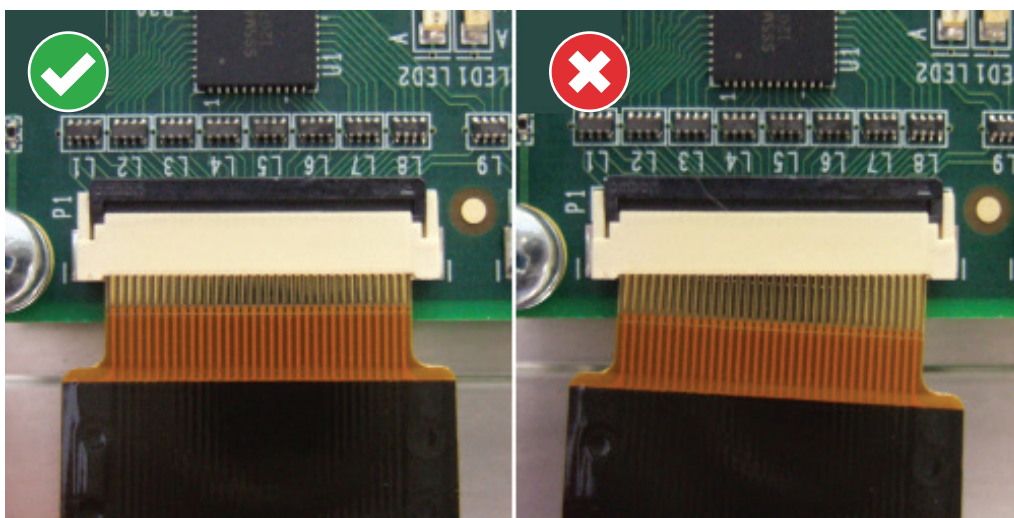

FIGURE 18   CORRECT AND INCORRECT FLEXIBLE CABLE INSERTION INTO ZIF SOCKET

Once the flexible cables have been correctly inserted into the ZIF sockets, the ZIF connector locking bars must be pressed down in order to lock the flexible cables into the ZIF sockets, as shown in Figure 19.
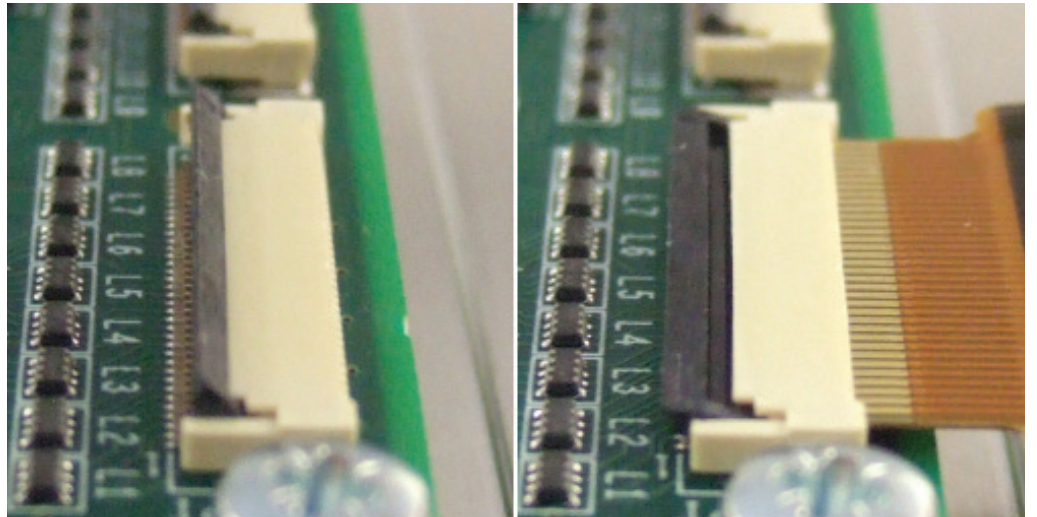
FIGURE 19   ZIF CONNECTOR LOCKING BAR IN UNLOCKED AND LOCKED POSITIONS

6.
POWER AND DATA CONNECTIONS

POWER AND DATA CONNECTIONS

A USB cable should be connected to the mini-B socket on the controller PCB (or Serial cable for Serial type controllers), as shown in Figure 20.
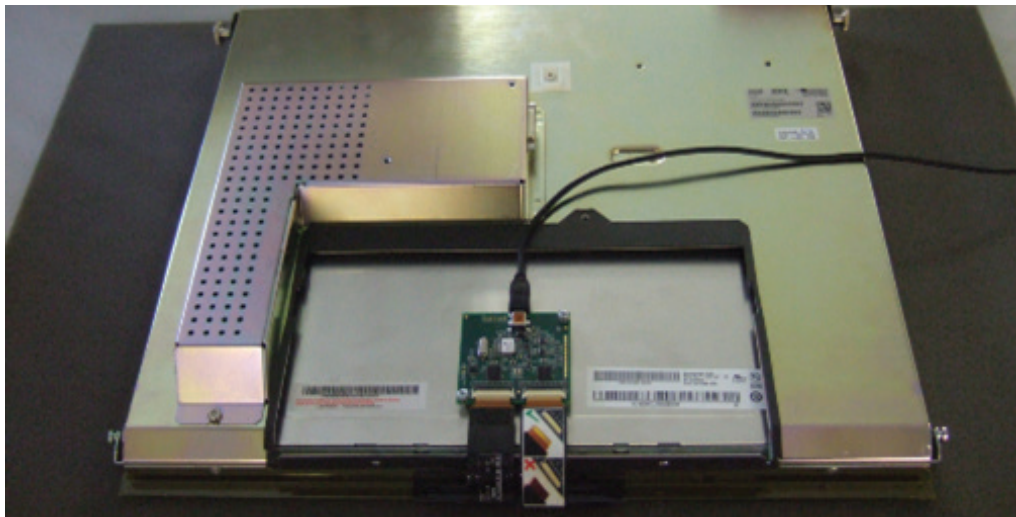

FIGURE 20   USB CABLE PLUGGED INTO CONTROLLER PCB

Care should be taken when inserting the USB connector into the socket to avoid damage or lifting of the USB connector from the PCB, as shown in Figure 21.
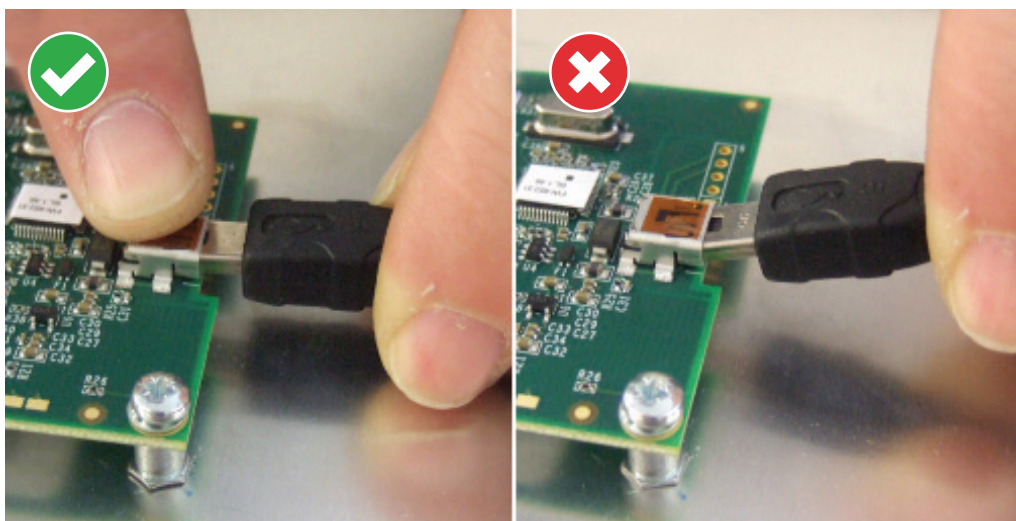

FIGURE 21   CORRECT AND INCORRECT USB CABLE INSERTION INTO USB MINI-B SOCKET

The USB cable should be fixed to the chassis near to the controller PCB, as shown in Figure 22.
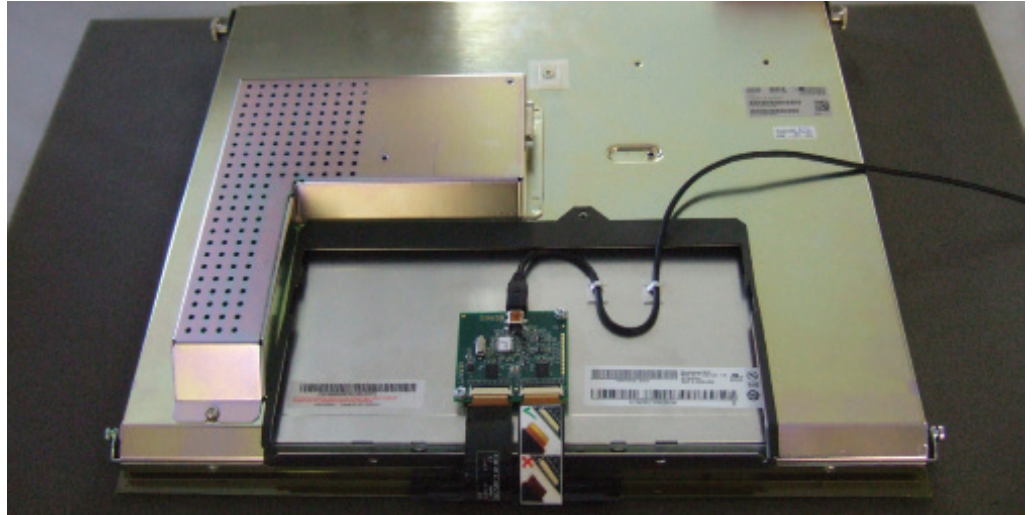
FIGURE 22   USB CABLE HELD IN PLACE

Adding cable clips similar to those shown in Figure 23 will reduce the risk of damage occurring to the controller PCB connector if the cable is accidentally pulled. If adhesive pads are used on the clips, it must be ensured that they will maintain their adhesion at any temperature that they may be subjected to in service.
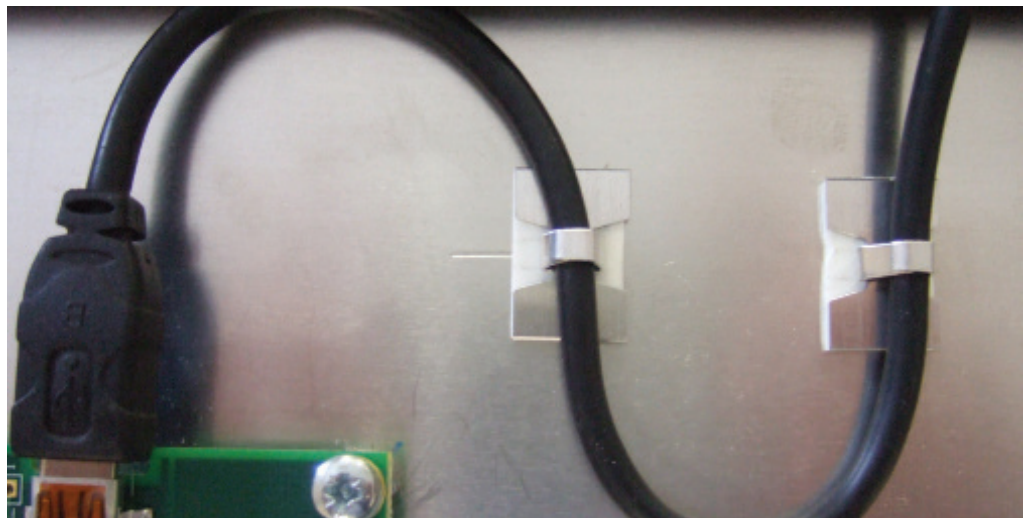

FIGURE 23   CABLE CLIPS HOLDING CABLE IN PLACE

The LCD video and power connections should be connected to the LCD, as shown in Figure 24, and to the PC and power sockets.

FIGURE 24   VIDEO AND POWER CONNECTIONS CONNECTED TO LCD

The completed integration is shown in Figure 25.

FIGURE 25   COMPLETED INTEGRATION

The USB cable from the controller should be connected to an available USB 1 / USB 2.0 compatible port on the computer, as shown in Figure 26. The USB cable should be a maximum length of 5 metres, and plug directly into a USB port on the PC.

FIGURE 26   CONNECTING THE USB CABLE TO THE HOST PC

7.
USING A BEZEL

USING A BEZEL

The integration design may include a plastic or metal bezel to be used over the front of the sensor, as shown in Figure 27.

FIGURE 27   SENSOR WITH METAL BEZEL FITTED

If this is the case, the following points should be considered:

• If the bezel is metal, a 3mm spacing gasket is recommended between the front of the sensor and the rear of the bezel.

• A metal bezel must be grounded to a common ground point with the metal chassis and controller PCB.

• For good edge performance, it is recommended that the bezel is set back from the LCD viewing area by a minimum of 5mm. For edge flick gestures as found in Windows 8, increasing the bezel aperture size further may be beneficial.

• In most cases, the spacing gasket used will also be required to provide a watertight seal.

• For environments where the sensor surface may be subjected to rain or water droplets, it is recommended that a metal bezel has a not conductive intermediate section between the sensor surface and the inner edge of the bezel. This should be angled such as to prevent any ledge where water can collect. The purpose of this is to prevent water from forming a continuous ground path from the sensor surface to the metal bezel, as this could result in undesirable behaviour.

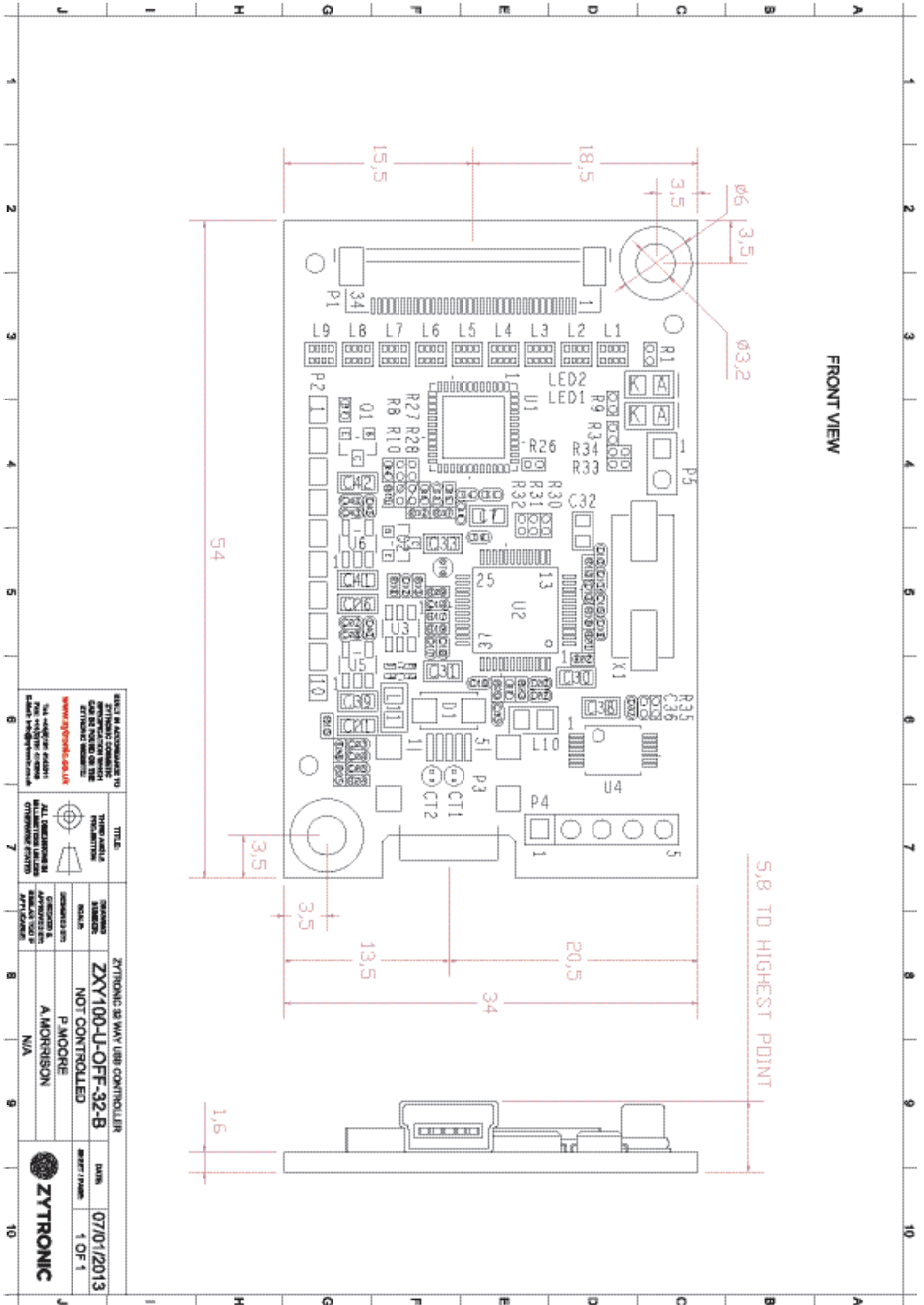# 8.
INTEGRATION
CHECKS

INTEGRATION CHECKS

✔ Once you have correctly completed a standard integration, you should be able to answer 'Yes' to the following questions:

✔ Is the gasket used between the LCD and the touch sensor of the correct thickness?

✔ Is the sensor fitted with the glass face forward (Viewing Face Label visible)?

✔ Is the controller grounded either through the mounting standoffs or via a low impedance ground cable?

✔ Is the controller spaced away from the metal chassis by at least 5mm?

✔ Are the flexible cables bent to radius of no less than 2.5mm where they attach to the glass and anywhere else along their length?

✔ Are the flexible cables inserted into the correct ZIF connector sockets?

✔ Are the flexible cables inserted into the ZIF connector sockets with the gold contacts visible?

✔ Are the flexible cables fully inserted into the ZIF connector sockets?

✔ Are the flexible cables locked into the ZIF connector sockets?

✔ Is the USB cable plugged directly into a USB port on the PC?

✔ If a metal bezel has been used, is it spaced away from the front face of the sensor with the correct gasket thickness of 3mm?

✔ If a metal bezel has been used, is it grounded to a common ground point with the metal chassis and controller PCB?
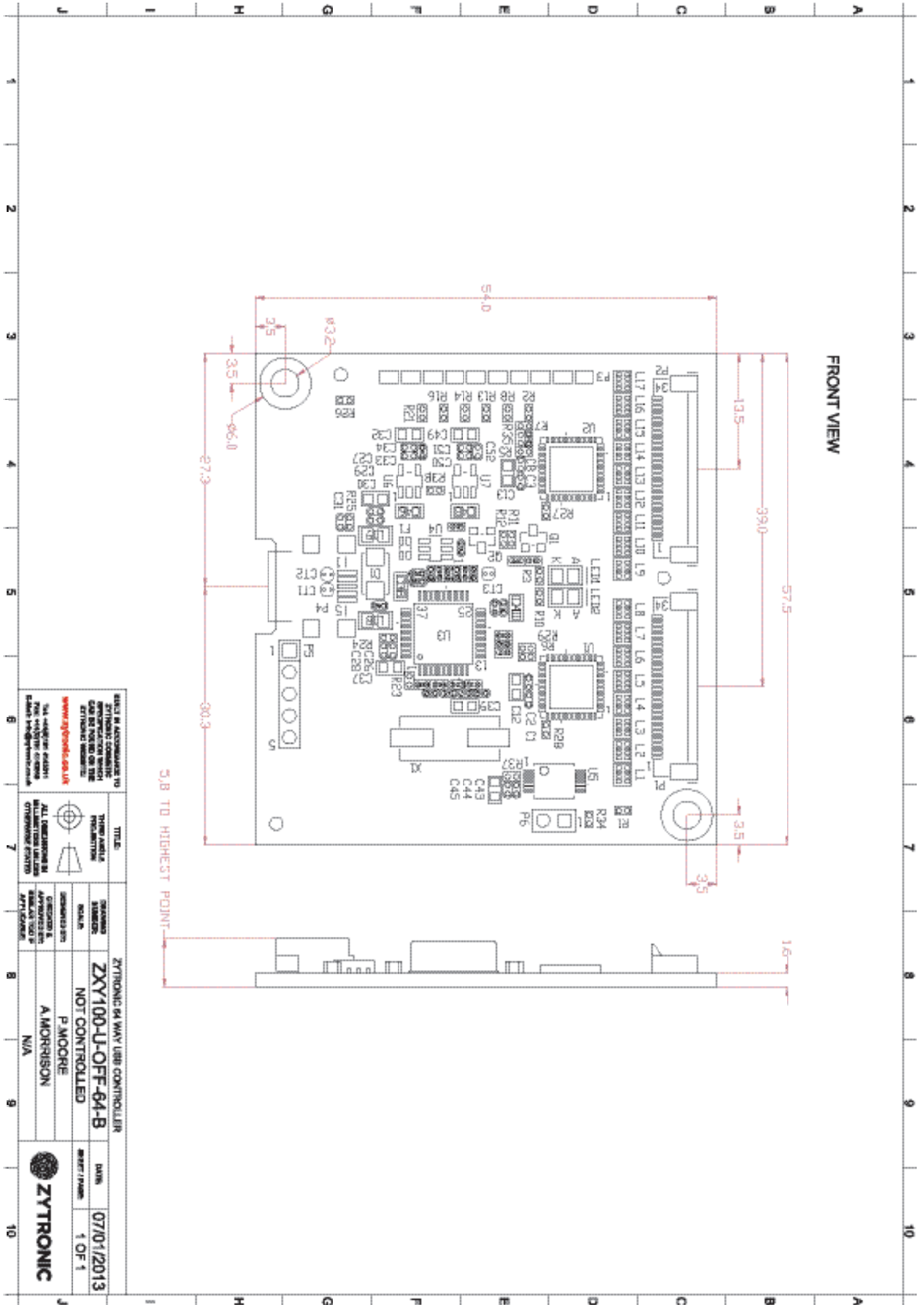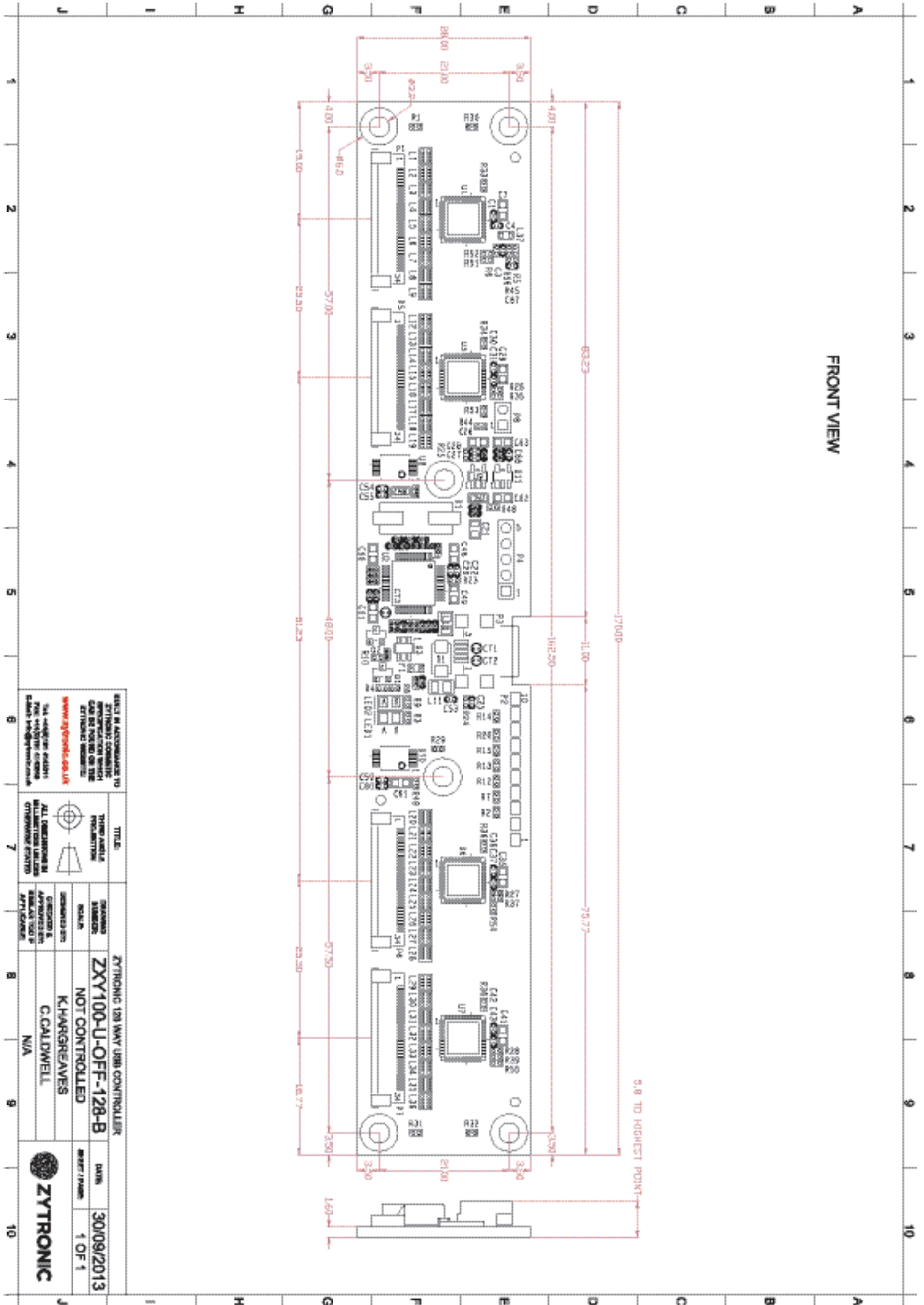
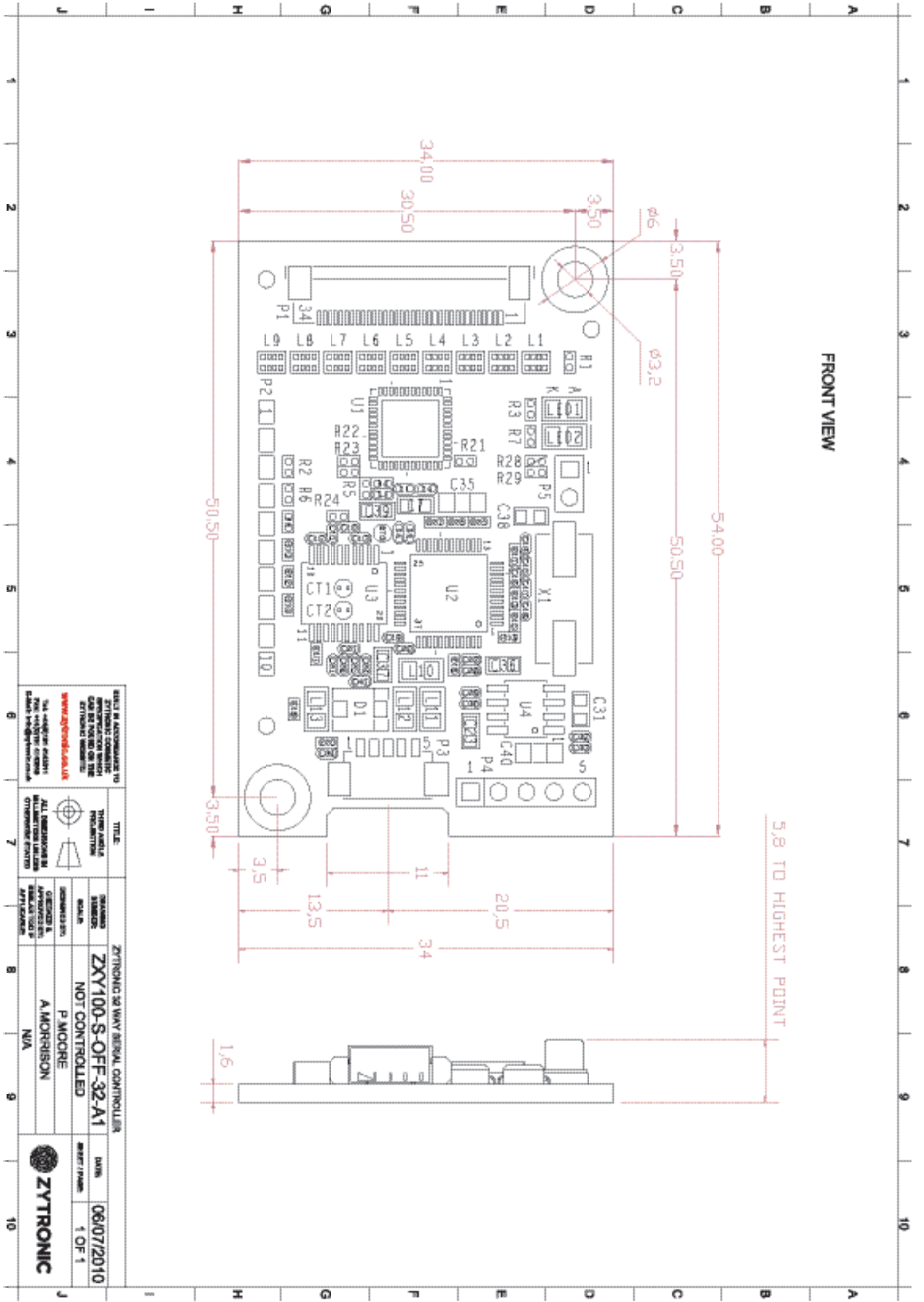# 9.
CONTROLLER PCB DRAWINGS

FRONT VIEW

ZYTRONIC 32 WAY USB CONTROLLER

ZXY100-U-OFF-32-B

NOT CONTROLLED

P.MOORE

A.MORRISON

N/A

07/01/2013

1 OF 1

ZYTRONIC

FRONT VIEW

ZYTRONIC 64 WAY USB CONTROLLER

ZXY100-U-OFF-64-B

NOT CONTROLLED

P.MOORE

A. MORRISON

N/A

07/01/2013

1 OF 1

ZYTRONIC

FRONT VIEW

ZYTRONIC 128 1WAY USB CONTROLLER

ZXY100-U-OFF-128-B

NOT CONTROLLED

K.HARGREAVES

C.CALDWELL

N/A

30/09/2013

1 OF 1

FRONT VIEW

ZYTRONIC 32 WAY SERIAL CONTROLLER

ZXY100-S-OFF-32-A1

NOT CONTROLLED

P. MOORE

A. MORRISON

N/A

06/07/2010

1 OF 1

FRONT VIEW

ZYTRONIC 64 WAY SERIAL CONTROLLER

TITLE: ZXY100-S-OFF-64-A1
NOT CONTROLLED

P. MOORE
A. MORRISON
N/A

DATE: 06/07/2010
1 OF 1

ZYTRONIC

FRONT VIEW

ZYTRONIC 128 WAY SERIAL CONTROLLER

ZXY100-S-OFF-128-A1

NOT CONTROLLED

FRONT VIEW

REAR VIEW

ZYTRONIC 32 WAY USB3 CONTROLLER

ZXY110-U-OFF-32-A

NOT CONTROLLED

K.HARGREAVES

C.CALDWELL

N/A

21/01/2015

1 OF 1

WWW.ZYTRONIC.CO.UK
ZYTRONIC COPYRIGHT 2015
P/N:ZXY110-U-OFF-32-A
POWER:5V D.C. 100mA MAX

SHIELD
GND
D+
D-
VBUS

FRONT VIEW

REAR VIEW

ZYTRONIC 64 WAY USB CONTROLLER
ZXY110-U-OFF-64-A

NOT CONTROLLED

K.HARGREAVES
C.CALDWELL
N/A

21/01/2015
1 OF 1

CE FC RoHS

WWW.ZYTRONIC.CO.UK
ZYTRONIC COPYRIGHT 2015
P/N:ZXY110-U-OFF-64-A
POWER:5V D.C. 100mA MAX

SHIELD
GND
D+
D-
VBUS

10.
SERIAL CABLE DRAWING
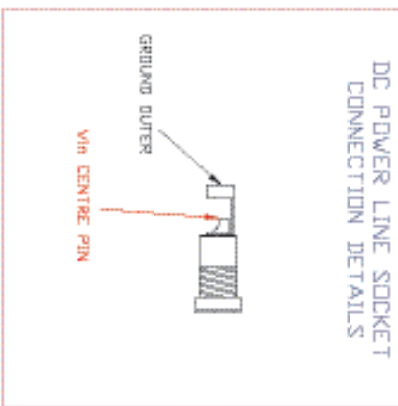
NOTE: ALL PARTS MUST BE RoHS COMPLIANT

MOLEX CONNECTION DETAILS

SHIELD
GND
Vin
TX
RX

HEATSHRINK APPLIED TO EXPOSED SHIELD

DC POWER LINE SOCKET CONNECTION DETAILS

GROUND OUTER

Vin CENTRE PIN

HOUSING – MOLEX PART No. 51021-0500
CRIMP – MOLEX PART No. 50079-8100 OR 50058-8100

HEATSHRINK

4 CORE SHIELED 28 AWG CABLE

150mm CABLE
(TO BACK OF CONNECTOR)

2 CORE SHIELED 28 AWG CABLE

1500

HEATSHRINK

20

RS232 CONNECTOR

DC POWER LINE SOCKET
RAPID PART No. 20-1066

CONNECTION DETAILS RS232 D9
VIEWED FROM D9 REAR (FEMALE)

D9 SHELL

Vin

SHIELD (TO
BE SOLDERED
TO D9 BODY)

GROUND

LINE
SOCKET

MOLEX
CONNECTOR

RX

TX
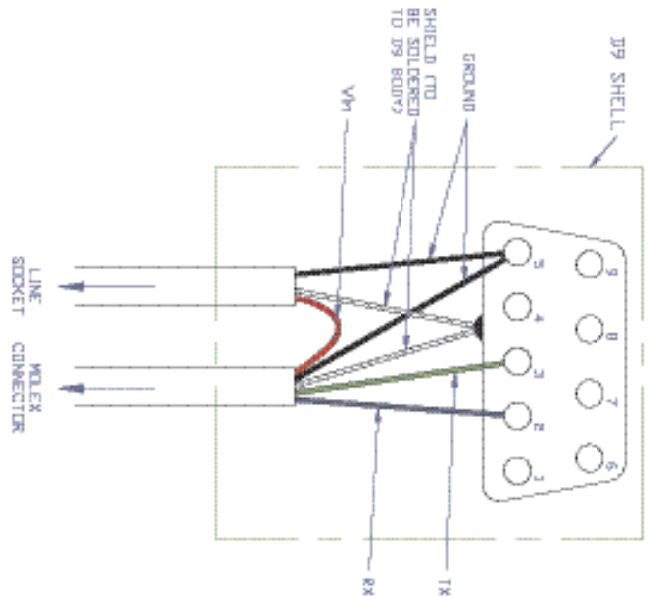
Title: SERIAL XY CONTROLLER CABLE DIAGRAM
Third Angle Projection
Part no:
Scale: NOT TO SCALE
Designed by: PG
Checked by: AM
Approved by:
All Dimensions In Millimeters
Date: 30/03/06
Sheet: 1 of 1

ZYTRONIC

Rev Revision note

Rev'd Ch'd App'd Date

11.
FURTHER
INFORMATION

FURTHER INFORMATION

Further information and technical support can be obtained by contacting Zytronic:

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Blaydon on Tyne
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www.zytronic.co.uk
Company No. 379908. Registered in England.

WHAT WE DO

Manufacturing touch technology products from a single site comprising three modern factory premises in Blaydon upon Tyne, United Kingdom, Zytronic produce a range of projected capacitive technology (PCT™) touch interactive products which are used in electronic displays for information kiosks, ATM's, ticketing and gaming machines, as well as by military, computer, telecommunications and medical manufacturers.

Our diverse range of touch sensor technology products are all based on our internationally award winning projected capacitive technology, providing a highly durable and stable range of touch products where the sensing element is uniquely embedded behind the first surface of the touch substrate.

The Zytronic in-house glass processing facilities include automated cutting, edge grinding, polishing and drilling equipment complemented by bending and thermal tempering ovens and silk-screen printing equipment. These facilities are complemented by the lamination, material science and electronics skills and expertise of our dedicated staff.

Zytronic also has in-house electro-plating and coating facilities which enable the production of optical filters to enhance the performance of information displays and provide anti-vandal protection, RFI/EMI filters to minimise electromagnetic emissions and interference from electronic displays and specialised laminated products for the defence, rail, road and automotive industries.

Our commitment to innovative touch technology development in composite technology, stringent (ISO approved) quality controls and fast-response customer service is complimented by our own dedicated external sales team, undertaking both direct sales to major customers and assisting with sales through the extensive world-wide network of agents and distributors.

Zytronic – the Touch Technology specialists – providing a range of projected capacitance technology touch interactive products.

Our award winning projected capacitive touch technology products are being used in a range of industrial and public access and service applications such as information and financial kiosks, digital signage, ticketing, gaming and vending machines, as well as telematics and medical devices.

ZYTRONIC
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