

AIM104-VGA-CRT

Introduction

The AIM104-VGA-CRT is a high performance Super VGA graphics PC/104 form factor board for use with PC/104 based processor systems. This product is based around the CIRBUS LOGIC GD5429 True Colour VGA controller.

Features

- 8/16 bit PC-104 interface.
- Hardware and BIOS compatibility with IBM S-VGA display standards.
- Supports a wide range of colour CRT monitors. Connection is made using the industry standard 15-pin high density D-type connector, or as a build option an 'alternative' 16 way IDC ribbon connector.
- 'Green PC' power-saving features.
- VESA advanced feature connector (VAFC) for video overlay and colour key support for use in Multi-Media applications.
- 32K byte BIOS ROM.
- 1MB of on-board video memory fitted as standard.
- Standard module supports graphics modes up to 1280 x 1024 (interlaced) in 16 colours, 1024 x 768 in 256 colours (non-interlaced 8 bits/pixel), 800 x 600 in 64K colours (non-interlaced 16 bit/pixel) and 640 x 480 in 16M colours (non-interlaced 24 bits/pixel).
- Extended text modes up to 132 columns by 43 rows.
- Support of zero wait state option for faster operation.
- 'End of active field' interrupt implemented on IRQ9.
- 5V only operation.
- Power consumption from host max. 200mA @+5V.
- Operating temperature range -20 to +70°C.
- MTBF: 492,362 hours (using generic figures from MIL-HDBK-217F at ground benign).

Operation

The AIM104-VGA-CRT is intended to be used as the sole video board in a PC/104 based system using either a PC/AT compatible processor board such as Arcom's SBC104, or Arcom's TARGET processor boards TARGET188EB and TARGET386EX. Using the AIM104-VGA-CRT with Arcom's TARGET processors requires some modifications to the Target Board Firmware - For details of these changes refer to Arcom Product Note No. 27.

The AIM104-VGA-CRT will drive a wide range of colour and monochrome IBM compatible monitors including standard VGA fixed frequency analogue and multi-frequency (Multisync) monitors. In addition to being 100% IBM VGA compatible the AIM104-VGA-CRT BIOS complies fully with VESA video modes and specifications. Software written to use VESA video modes will run without the need to install extra drivers.

Electromagnetic Compatibility (EMC)

The AIM104-VGA-CRT is classified as a 'component' with regard to the European Community EMC regulations and it is the users responsibility to ensure that systems using the board are compliant with the appropriate EMC standards.

If the electronic system requires input protection against high voltage transients (to meet CE requirements) it is recommended that an external interface board is located at the point where the external wiring enters the electronic system enclosure.

Connections

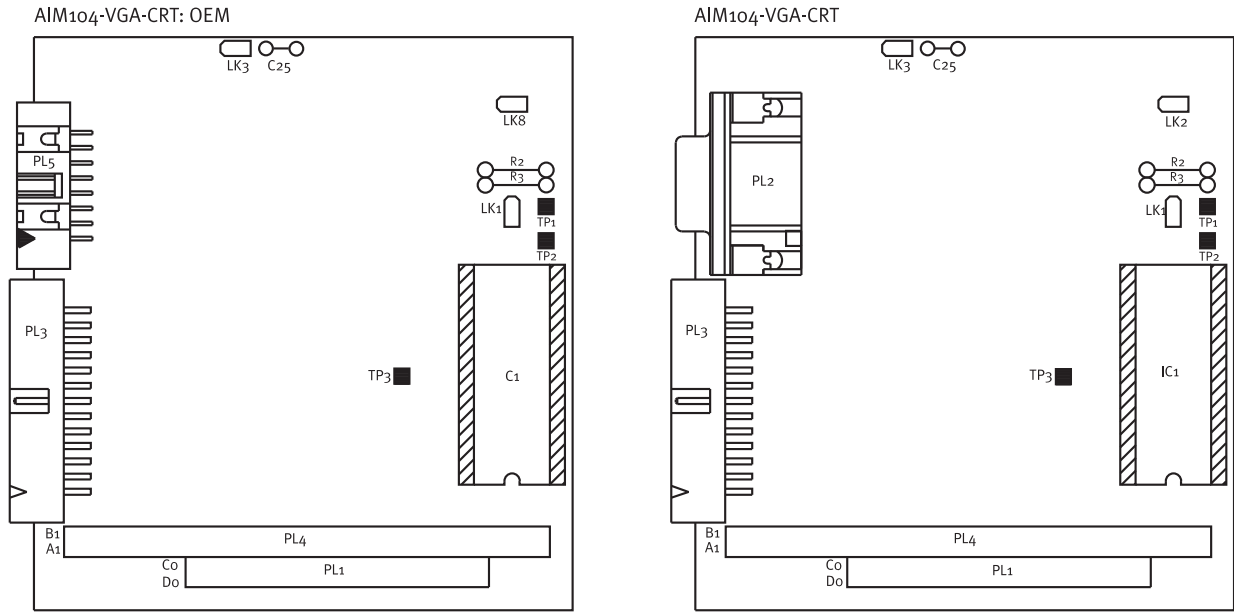
The AIM104-VGA-CRT may be plugged into either an 8 or 16 bit PC/104 stack. Once located in the platform processor PC/104 stack, plug the high density D-type connector from the monitor into the mating half, PL2, on the AIM104-VGA-CRT.

Switching-on

Switch the monitor on and then switch the system on. The monitor will display light-grey text on a black background as the system goes through its boot sequence.

Link positioning

Default link position diagram



The AIM104-VGA-CRT has three link selectable options. Throughout this section ‘+’ indicates a default link setting.

LK1-	+ Fitted, Adaptor asserts IRQ9 on pin B4 of PL4 at the end of an active field. Omitted, IRQ9 is not asserted.
LK2-	+ Fitted, Zero Wait State video memory accesses are supported. Omitted, No Zero Wait State video memory accesses.
LK3-	+ Fitted, Casing of PL2 is connected to System Chassis Ground. Omitted, No connection is made between System Chassis Ground and PL2. Note- Fitting/Omitting LK3 may reduce interference effects of System Ground loops.

Utilities and Drivers Disk

The AIM104-VGA-CRT is supplied with a Utilities disk. This contains Cirrus Logic's utility program CLMODE and the display drivers required by Microsoft Windows 3.1 to support higher text and graphics resolutions.

Installing Utilities and Drivers under Windows 3.1

Windows 3.1 users need to install the GD5429 display drivers. With Windows running on your machine, run the installation program INSTALL.EXE from the diskette supplied.

Using the AIM104-VGA-CRT under Windows '95 and Windows NT

Windows '95 and Windows NT users are able to auto-detect new hardware. Your Windows '95/NT disks should contain the necessary drivers for the CL-GD5429.

Win '95 - The display drivers for the AIM104-VGA-CRT are installed simply by using the Add New Hardware Wizard in the Control Panel Program Folder. This allows auto-detection and installation of drivers for new hardware.

Win NT - Windows NT runs a Hardware Auto-detect at start-up which should recognise the AIM104-VGA-CRT and the CL-GD5429 controller.

CLMODE

Selecting the correct monitor refresh rates will allow the AIM104-VGA-CRT to display the highest quality video with the attached monitor. The CLMODE utility allows the user to define the monitor type attached and set the video modes supported by the AIM104-VGA-CRT. After running the installation program from the utilities disk provided, CLMODE.EXE can be found in the directory **C:\WINDOWS\VGAUTIL**. To use this utility correctly, follow the on screen instructions and the help feature. CLMODE is a DOS based program, and cannot be executed under Windows.

Memory Map and I/O Map

Standard VGA memory and I/O mapping are used. The VGA controller sleep register address is 46E8.

Connections

- Pin assignments for 15-pin high density D-type connector PL2.

Pin No.	Function	Pin No.	Function
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	RED RETURN
7	GREEN RETURN	8	BLUE RETURN
9	NC	10	GND
11	NC	12	NC
13	HORIZ. SYNC.	14	VERT. SYNC.
15	NC		

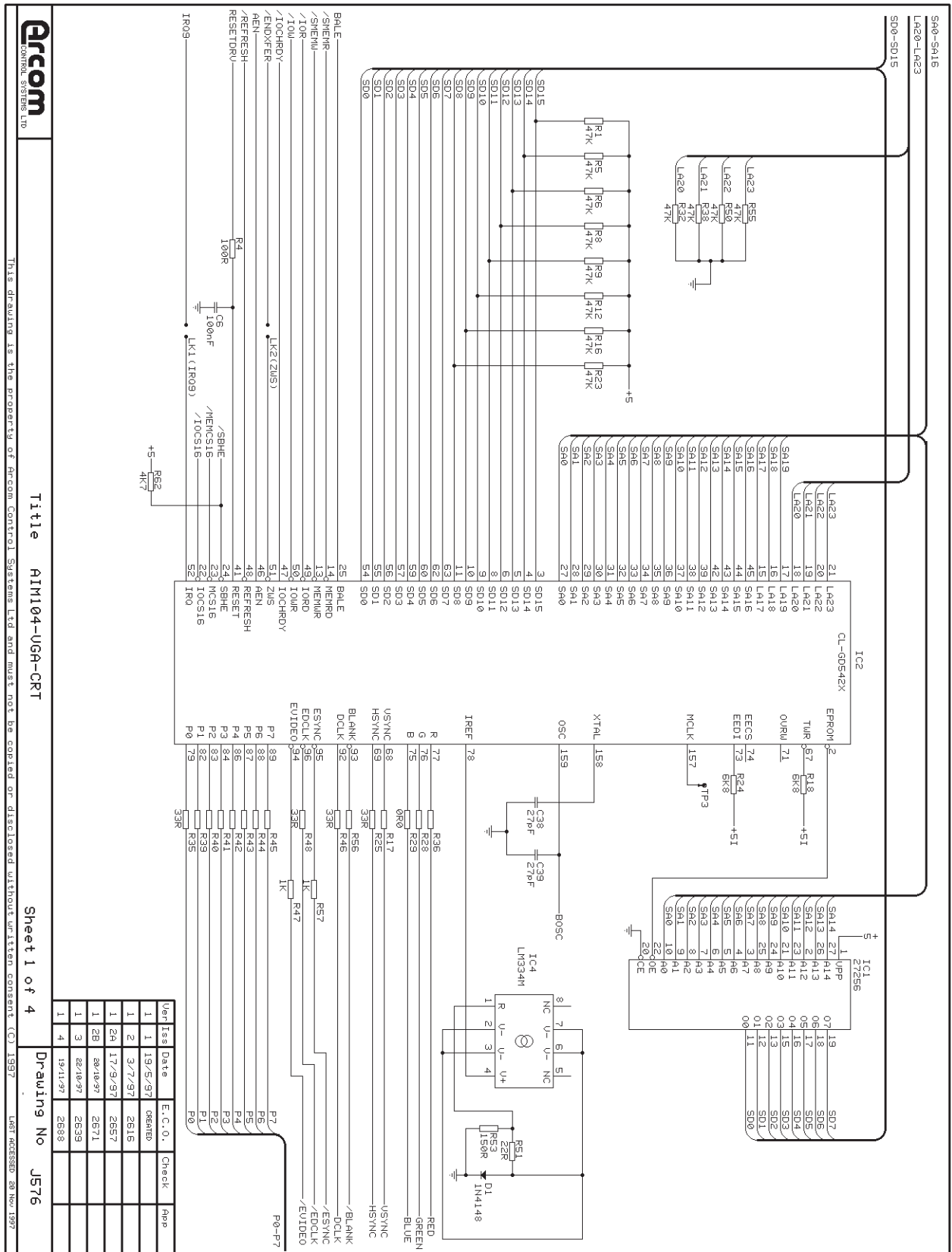
- Pin assignments for 16 way R/A IDC ribbon header PL5

Pin No.	Function	Pin No.	Function
1	RED	2	RED RETURN
3	GREEN	4	NC
5	BLUE	6	GREEN RETURN
7	NC	8	NC
9	BLUE RETURN	10	GND
11	GND	12	HORIZ.SYNC.
13	NC	14	VERT. SYNC.
15	NC	16	NC

- Pin assignments for 26-pin VESA feature connector PL3

Pin No.	Function	Pin No.	Function
1	GND	2	P0
3	GND	4	P1
5	GND	6	P2
7	/EVIDEO	8	P3
9	/ESYNC	10	P4
11	/EDCLK	12	P5
13	NC	14	P6
15	GND	16	P7
17	GND	18	DCLK
19	GND	20	/BLANK
21	GND	22	HSYNC
23	NC	24	VSUNC
25	NC	26	GND

Circuit Diagrams



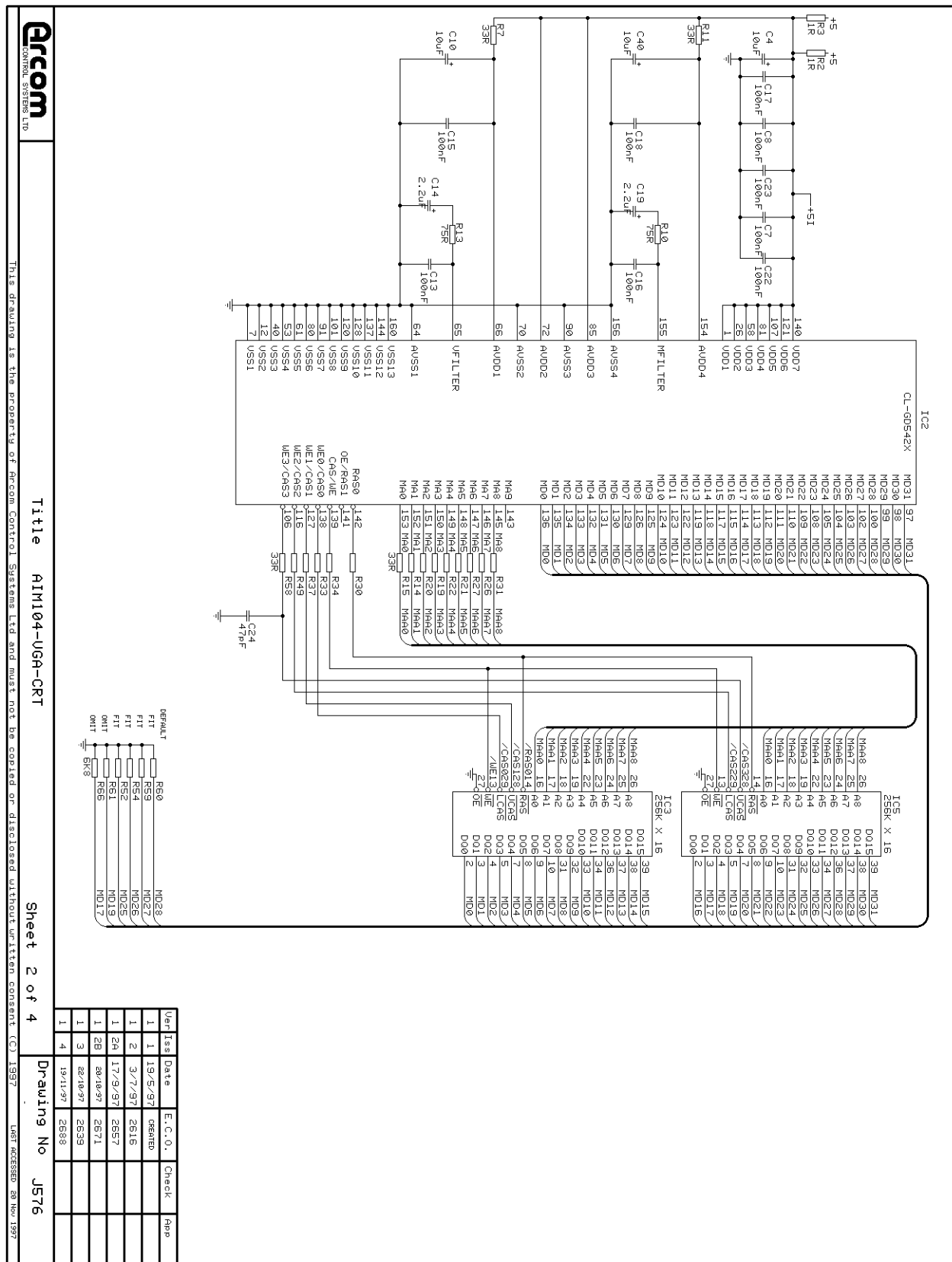
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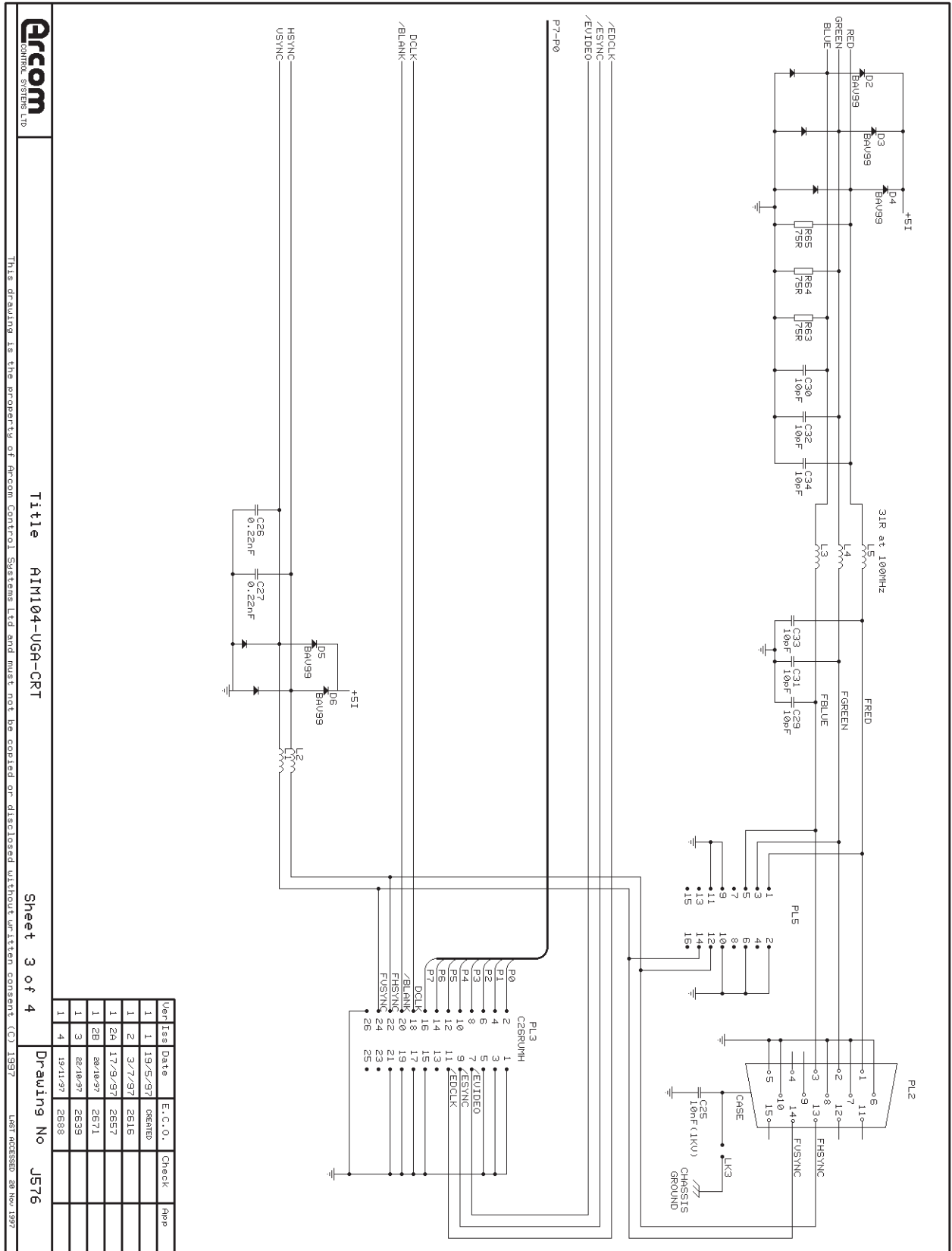
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User	Iss	Date	E.C.O.	Check	App
1	1	19/5/97	CREATED		
1	2	3/7/97	261B		
1	2A	17/9/97	2657		
1	2B	28/10/97	2671		
1	3	22/10/97	2639		
1	4	19/11/97	2688		

Revision History

Manual	PCB	Comments	
Issue A	V1 Iss 2a	971016	First released in this format.
Issue B	V1 Iss 3	971111	ECO2639.
Issue C	V1 Iss 4	971120	ECO2688.

Product Information

Full information about other Arcom products is available via the **Fax-on-Demand System**, (Telephone Numbers are listed below), or by contacting our **WebSite** at: **www.arcomcontrols.com**

Useful Contact Information

Customer Support

Tel: +44 (0)1223 412 428
 Fax: +44 (0)1223 403 409
 E-mail: support@arcom.co.uk

Sales

Tel: +44 (0)1223 411 200
 Fax: +44 (0)1223 410 457
 E-mail sales@arcom.co.uk

or for the US: E-mail

icpsales@arcomcontrols.com

United Kingdom:

Arcom Control Systems Ltd
 Clifton Road
 Cambridge CB1 7EA, UK
 Tel: 01223 411 200
 Fax: 01223 410 457
 FoD: 01223 240 600

United States:

Arcom Control Systems Inc
 13510 South Oak Street
 Kansas City MO 64145 USA
 Tel: 816 941 7025
 Fax: 816 941 0343
 FoD: 800 747 1097

Belgium:

Groen Nummer:
 Tel: 0800 7 3192
 Fax: 0800 7 3191

France:

Numero Vert
 Tel: 0800 90 84 06
 Fax: 0800 90 84 12
 FoD: 0800 90 23 80

Germany:

Kostenlose Infoline:
 Tel: 0130 824 511
 Fax: 0130 824 512
 FoD: 0130 860 449

Netherlands:

Gratis 0800 Nummer:
 Tel: 0800 0221136
 Fax: 0800 0221148

Italy:

Numero Verde:
 Tel: 0800 790841
 Fax: 0800 780841
 FoD: 0800 873600

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If you intend to write your own low level software, you can start with the source code on the disk which is supplied. This is example code only to illustrate use on Arcom's products. It has not been commercially tested. No warranty is made in respect of this code and Arcom shall incur no liability whatsoever or howsoever arising from any use made of the code.

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