

JFLEX-Visualisation1

Product Manual

Document Revision 1.0

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1. USER INFORMATION

1.1 About This Manual

This document provides information about products from Kontron Embedded Computers AG and/or its subsidiaries. No warranty of suitability, purpose, or fitness is implied. While every attempt has been made to ensure that the information in this document is accurate, the information contained within is supplied “as-is” and is subject to change without notice.

For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

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1.4 Standards

Kontron Embedded Modules is certified to ISO 9000 standards.

1.5 Warranty

This Kontron Embedded Modules product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period, Kontron Embedded Modules will at its discretion decide to repair or replace defective products.

Within the warranty period, the repair of products is free of charge as long as warranty conditions are observed.

You may receive a bill for test costs if Kontron Embedded Modules finds no fault with the product. You also may receive a bill for repairs if a product's warranty has expired.

For warranty service or repair, return the product to a Kontron Embedded Modules service facility listed in the Technical Support section of this document.

The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

Kontron Embedded Modules will not be responsible for any defects or damages to other products not supplied by Kontron Embedded Modules that are caused by a faulty Kontron Embedded Modules product.

1.6 Technical Support

Technicians and engineers from Kontron Embedded Modules and/or its subsidiaries are available for technical support. We are committed to making our product easy to use and will help you use our products in your systems.

Before contacting Kontron Embedded Modules technical support, please consult our Web site for the latest product documentation, utilities, and drivers. If the information does not help solve the problem, contact us by telephone.

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2. INTRODUCTION

2.1 JFLEX-Visualisation1

The JFLEX-Visualisation1 extends Kontron's JRex family and serves as an I/O add-on that offers a secondary CRT/LCD interface and a 16550-compatible serial port (available for JRex-GX1 modules).

Every JRex 3.5" SBC features an interface to mount a JFLEX.

The JFLEX-VISUALISATION1 incorporates the following features:

- VGA CRT and LCD controller with 2MB video RAM
- LCD controller supports almost all LCDs
- Resolution up to 1280x1024 on flat panel and CRT
- Color depths up to 16 million colors
- Simultaneous display on CRT and flat panel
- True 64-bit graphics engine and accelerator
- PCI-bus interface, including Burst Mode support
- Drivers for Win3.11, Win95, NT3.51, NT4.0, and OS/2
- Plug and play panel interfacing
- Low power CMOS technology

3. SPECIFICATIONS

3.1 Mechanical Specifications

3.1.1. Dimensions

- 82.5mm x 80.2mm (3.25'' x 3.16'')

3.2 Electrical Specifications

3.2.1. Supply Voltage

- 5V DC +/- 5%
- 3.3V DC +/- 5%
- 12V DC +/- 5% (for 12V panels and 12V backlight)

3.2.2. Supply Voltage Ripple

- 100mV peak to peak 0-20MHz

3.2.3. Supply Current (typical, DOS prompt)

- 5V: typical 34mA at 25°C
- 3.3V: typical 181mA at 25°C

3.2.4. VGA Connector Signals

- Sync output current low: 18mA at 0.5V
- Sync output current high: -12mA at 2.4V
- RGB output voltage: 0 - 0.7V with 75 Ohm external termination
- RGB output current: 0 - 14mA

3.3 Environmental Specifications

3.3.1. Temperature

- Operating: 0 to + 60°C*
- Nonoperating: -10 to + 85 ° C

Note:
*****The maximum operating temperature is the maximum measurable temperature on any spot on the module's surface. It is the user's responsibility to keep this temperature within the above specification.

3.3.2. Humidity

- Operating: 10% to 90% (noncondensing)
- Nonoperating: 5% to 95% (noncondensing)

3.3.3. Thermal Gradient

- Operating: 25 °C per hour
- Nonoperating: 40 °C per hour

3.3.4. Altitude

- Operating: 0 - 3000 m
- Nonoperating: 0 - 5000 m

4. CONNECTORS

Internal Panel Connector	Pin	Pin	Internal Panel Connector		Pin	CRT Connector
X4			**X4**			**X5**
FLM	1	37	PID0		1	RED
LP	2	38	PID1		2	GREEN
GND	3	39	PID2		3	BLUE
GND	4	40	PID3		4	(ID2)
SCLK	5	41	BIOSEL2		5	GND
GND	6	42	GND		6	GND
GND	7	43	I2DAT		7	GND
MOD	8	44	I2CLK		8	GND
P16	9	45	P27		9	Key
P17	10	46	P28		10	GND
P8	11	47	P29		11	(ID0)
P9	12	48	P30		12	(ID1)
P0	13	49	P31		13	HSYNC
P1	14	50	GND		14	VSYNC
P2	15	51	VCC *1		15	RSVD
P3	16	52	DA_O0			
P10	17	53	P32			
P11	18	54	P33			
P18	19	55	-			
P19	20	56	VSYNC			
P4	21	57	HSYNC			
P5	22	58	BLU		**Pin**	**Serial Connector**
P6	23	59	GRN			
P7	24	60	RED			
P12	25	61	SW_BACK			
P13	26	62	VDD_SRC			
P14	27	63	BACK_SRC			**X1**
P15	28	64	+3.3V *1		1	DCD
P20	29	65	+12V *1		2	RX
P21	30	66	+12V *1		3	TX
P22	31	67	VCC *1		4	DTR
P23	32	68	BIOSEL1		5	GND
GND	33	69	P34		6	DSR
P24	34	70	P35		7	RTS
P25	35	71	ENAVEE		8	CTS
P26	36	72	SW_VDD		9	RI

Notes:

To protect external power lines of peripheral devices, make sure that
-- that the wires have the correct diameter to withstand the maximum available current
-- that the enclosure of the peripheral device fulfils the fire-protection requirements of IEC/EN 60950.

5. SERIAL-COMMUNICATION INTERFACE

The JFLEX-VISUALISATION1 has one 16550-compatible serial port. You can only use this port with JRex-GX1 modules.

The line drivers conform to the IEEE RS232C standard.

Refer to the BIOS Operation chapter (I/O Device Configuration Submenu) in your JRex manual for information on configuraton.

6. VGA INTERFACE

The JFLEX-VISUALISATION1 adds the functions and features of the latest video standards to your JRex system. Using a plug-and-play PCI bus on the JFLEX interface in conjunction with a powerful BIOS simplifies interfacing to flat panels and CRTs.

JFLEX-VISUALISATION1 can control displays up to 1280x1024 resolution and color depths up to 16 million colors. Because there is no interface standard for LCD displays, some LCDs may require additional hardware to connect to JFLEX-VISUALISATION1.

Displays with resolutions less than 640x480 are generally supported but may require special software drivers to be PC compatible.

6.1 Supported Display Types

JFLEX-VISUALISATION1 supports a variety of panels that are configured by a dedicated cable for each panel. Jumper settings or software setup is not required. Because nearly all LCDs have different connectors, pinout or LCD voltages, this is the easiest and safest way to configure different flat panels.

JFLEX-VISUALISATION1 BIOS supports 16 flat-panel types, which are identified via software by reading the configuration pins PID0..3 on the internal panel connector. Kontron's BIOS Rev.1.32 uses the following entries:

Number	PID3..0	Type
1	0000	Dual Scan Color 1024x768
2	0001	TFT Color 1280x1024
3	0010	Dual Scan Color 640x480
4	0011	Dual Scan Color 800x600
5	0100	TFT Color 640x480 12 Bit
6	0101	TFT Color 640x480 18 Bit
7	0110	TFT Color 1024x768
8	0111	TFT Color 800x600 18 Bit
9	1000	TFT Color 800x600
10	1001	TFT Color 800x600
11	1010	Dual Scan Color 800x600
12	1011	Dual Scan Color 800x600
13	1100	TFT Color 1024x768 2x18 Bit
14	1101	TFT Color 1024x768 Analog
15	1110	Dual Scan Color 1024x600
16	1111	TFT Color 1024x600

6.2 PCI Bus

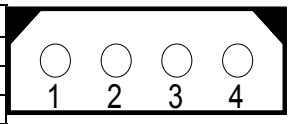
JFLEX-VISUALISATION1 fully supports the PCI bus as defined in PCI Local Bus Specification Rev. 2.0.

6.3 Power Supply

JFLEX-VISUALISATION1 boards need +5V and +12V for backlight use if necessary. Onboard 3.3V-circuitry and low-voltage panels are powered by the voltage provided by the JRex board.

6.4 Power Connector (X6)

Pin	Pin Function
1	+5V DC
2	GND
3	GND
4	+12V DC



Note:

The power lines on the JFLEX bus are limited to following currents:
-- 3.3V max. 3A
-- 5.0V max. 1A
-- 12V max. 0.5A
If you need more current than what is specified above, connect additional 5V and 12V through Power Connector X6. Otherwise, you may damage the JRex board or the JFLEX-VISUALISATION1.

7. LCD INTERFACE

Kontron offers a variety of flat-panel adapters. When using a Kontron adapter:

1. Check whether you have the correct adapter and cable for the panel you plan to use. Inspect the cable for damages.
2. Disconnect power from your system.
3. Connect the panel adapter to the internal LCD connector (X4) on the JFLEX-VISUALISATION1.
4. Connect the other end of the cable to your display.
5. Supply power to your system.
6. If no picture appears on your display, connect a CRT monitor to the CRT-connector (X5).
7. If you get a picture on the CRT monitor, start the "CHIPS Control Panel," which you can download from the Kontron Web site, and select "Both" in the LCD/CRT-Box.

If you still don't see any improvement, consider contacting the dealer for technical support.

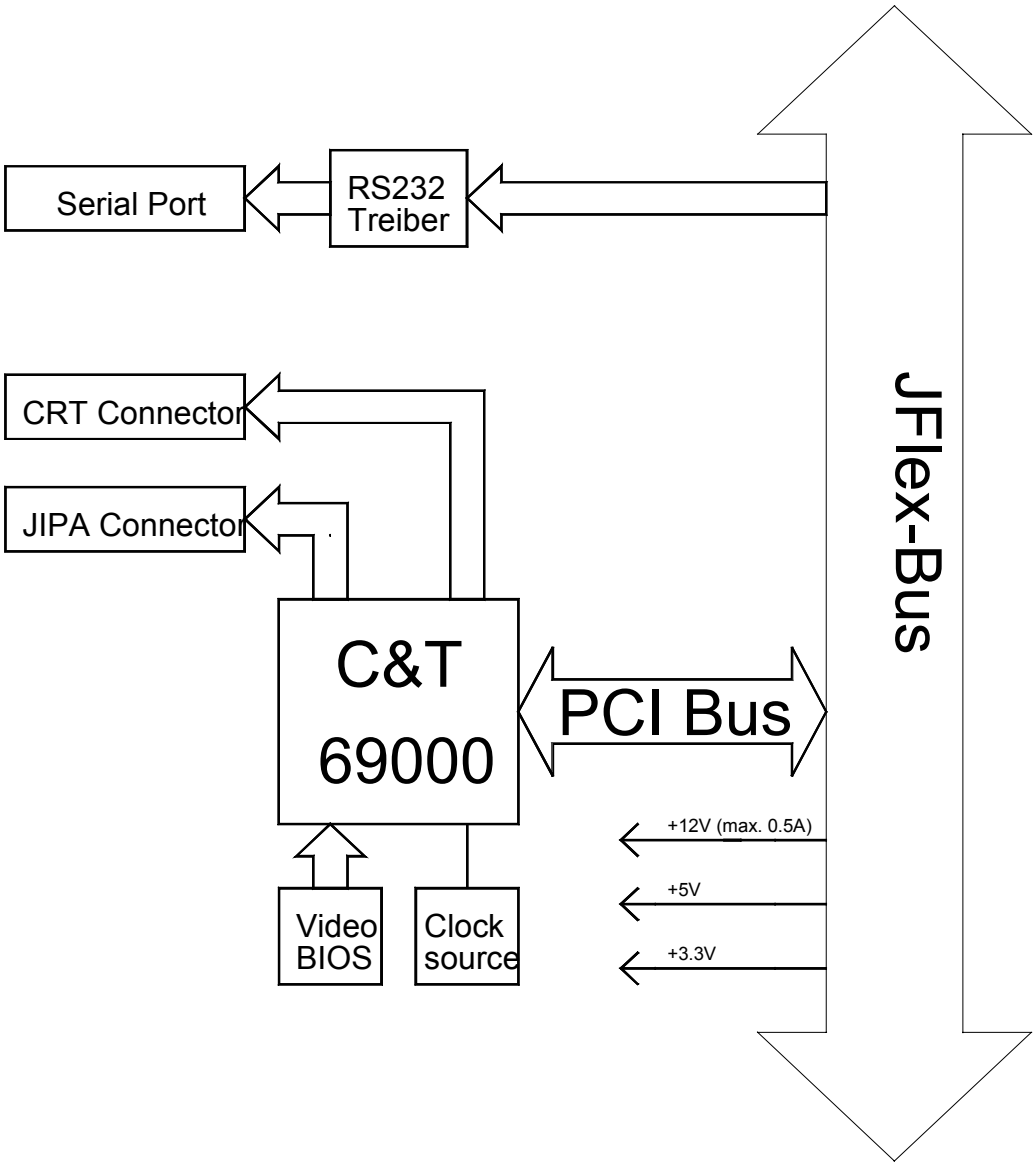
Note:
To determine whether your panel is supported, check the Kontron Web site for a list of new panels. We regularly update the list with panels that have been tested with the JFLEX-VISUALISATION1.

7.1 Available Video Modes

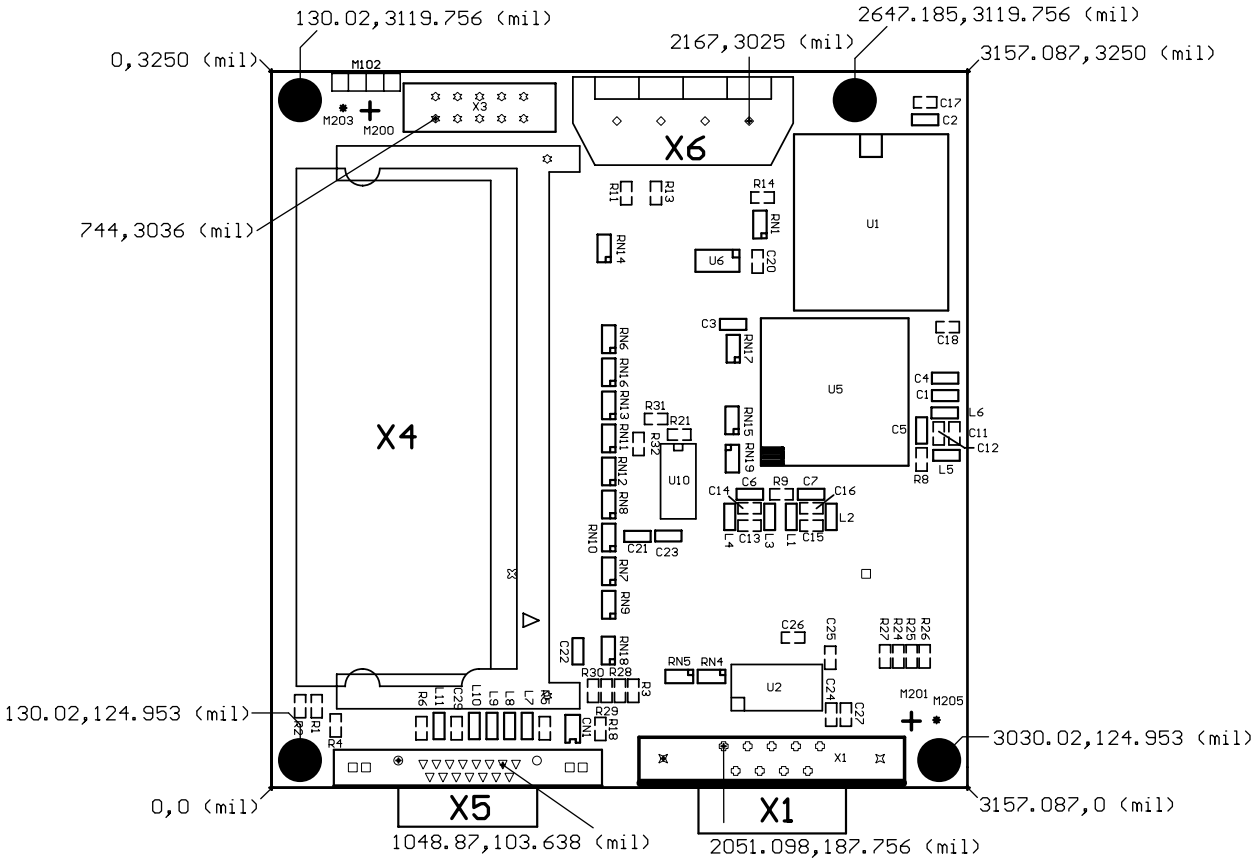
Video Mode	Display Mode	Chars / Pixels	Colors	Refresh Rate	Notes
00h/01h	Text	40x25	16	70	
02h/03h	Text	80x25	16	70	
04h/05h	Graphics	320x200	4	70	
06h	Graphics	640x200	2	70	
07h	Text	80x25	Mono	70	
0Dh	Graphics	320x200	16	70	
0Eh	Graphics	640x200	16	70	
0Fh	Graphics	640x350	Mono	70	
10h	Graphics	640x350	16	70	
11h	Graphics	640x480	2	60	
12h	Graphics	640x480	16	60	
13h	Graphics	320x200	256	70	
14h	Graphics	320x200	256	70	
15h	Graphics	320x200	64k	70	
16h	Graphics	320x200	16M	70	
17h	Graphics	320x240	256	60	
18h	Graphics	320x240	64k	60	
19h	Graphics	320x240	16M	60	
1Ah	Graphics	400x300	256	60	
1Bh	Graphics	400x300	64k	60	
1Ch	Graphics	400x300	16M	60	
1Dh	Graphics	512x384	256	60	
1Eh	Graphics	512x384	64k	60	
1Fh	Graphics	512x384	16M	60	
20h	Graphics	640x480	16	85	Panel only and Simultaneous
22h	Graphics	800x600	16	85	Panel only and Simultaneous
24h	Graphics	1024x768	16	85	Panel only and Simultaneous
28h	Graphics	1280x1024	16	75	Panel only and Simultaneous
30h	Graphics	640x480	256	85	
31h	Graphics	640x400	256	70	
32h	Graphics	800x600	256	85	
34h	Graphics	1024x768	256	85	
38h	Graphics	1280x1024	256	75	
3A	Graphics	1600x1280	256	60	
40h	Graphics	640x480	32k	85	
41h	Graphics	640x480	64k	85	

Video Mode	Display Mode	Chars / Pixels	Colors	Refresh Rate	Notes
42h	Graphics	800x600	32k	85	
43h	Graphics	800x600	64k	85	
44h	Graphics	1024x768	32k	85	
45h	Graphics	1024x768	64k	85	
50h	Graphics	640x480	16M	85	
52h	Graphics	800x600	16M	85	
61h	Graphics	640x480	64k	70	
62h	Graphics	640x400	16M	70	
64h	Graphics	1024x768	16	85	
68h	Graphics	1280x1024	16	75	
6Ah	Graphics	800x600	16	85	
70h	Graphics	640x480	256	85	
71	Graphics	640x400	256	70	
72	Graphics	800x600	256	85	
74	Graphics	1024x768	256	85	
78	Graphics	1280x1024	256	75	

8. APPENDIX A: BLOCK DIAGRAM



9. APPENDIX B: MECHANICAL DIMENSIONS AND CONNECTOR LAYOUT



9.1 Connector Table

The following table shows connector numbers as they appear in the above block diagram and their functions.

Connector	Function
X1	Serial connector
X4	Internal panel connector
X5	CRT connector
X6	Power connector

10. APPENDIX C: PC ARCHITECTURE INFORMATION

The following sources of information can help you better understand the technical concepts in this manual.

10.1 Buses and General PC Architecture

10.1.1. PCI/104

- PCI SIG
  The PCI-SIG provides a forum for its ~900 member companies, who develop PCI products based on the specifications that are created by the PCI-SIG. You can search for information about the SIG on the Web.

- *PCI & PCI-X Hardware and Software Architecture & Design*, Fifth Edition, Edward Solari and George Willse, Annabooks, 2001, ISBN 0-929392-63-9.

- *PCI System Architecture,* Tom Shanley and Don Anderson, Addison-Wesley, 2000, ISBN 0-201-30974-2.

10.1.2. RS-232 Serial

- EIA-232-E Interface
  The EIA-232-E standard specifies the interface between (for example) a modem and a computer so that they can exchange data. The computer can then send data to the modem, which then sends the data over a telephone line. The data that the modem receives from the telephone line can then be sent to the computer. You can search for information about the standard on the Web.

- *RS-232 Made Easy: Connecting Computers, Printers, Terminals, and Modems*, Martin D. Seyer, Prentice Hall, 1991, ISBN 0-13-749854-3

11. APPENDIX D: DOCUMENT-REVISION HISTORY

Revision	Date	Edited by	Changes
1.0	09.01.03	KFR and JL	Version of 1.0 manual released.
0.3	06.01.03	JL	Formatting and editing.
0.2	12.12.02	KFR	Added new mechanical drawing, added supply current for 3.3V and 5V, added that the serial port works only with JRex-GX1.
0.1	17.09.02	KFR	Created preliminary manual.