



Product Information

DV1-DRAGON • XMC Module

Low Power Dual Port Graphics Controller

Document No. 7240 • 19 June 2015



The DV1-DRAGON is a is a XMC standard single-width mezzanine card, equipped with a dual display low power graphics processor, suitable for fan-less applications. The DV1-DRAGON front bezel can be provided with a DVI-I video connector, or alternatively two VESA style VGA connectors.

The SM750 LynxExp embedded graphics processor provides 16MB video memory, and a 2D graphic accelerator. A maximum resolution of 1920 x 1080 (single display) or 1600 x 1200 (dual display) is supported. Drivers are available for Windows® and Linux operating systems.



DV1-1-DRAGON • DVI-I Connector

Related Information	
Ordering Information	www.ekf.com/liste/liste_22.html#DV1
DV1-DRAGON Home	www.ekf.com/d/dgxa/dv1/dv1.html

Feature Summary

- ▶ Form factor XMC single-width mezzanine card 139mm x 74mm
- ▶ Stack height 10mm XMC to host (module PCB to carrier card PCB)
- ▶ Host I/F Connector P15 XMC (black housing)
- ▶ Option P15 connector according to XMC 2.0 (white housing)
- ▶ PCI Express®, single lane, single link
- ▶ +3.3V operated (VPWR not in use)
- ▶ Power consumption +3.3V/0.45A typ., 0.55A max.

- ▶ DVI-I front bezel video connector - digital video and analog RGB all-in-one
- ▶ Single screen operation w. DVI-D to DVI-D cable assembly
- ▶ Dual screen operation w. splitter cable DVI-I to DVI-D and VGA
- ▶ Option dual front bezel VGA connectors

- ▶ SM750 LynxExp embedded graphics processor (Silicon Motion)
- ▶ 16MB integrated video DDR memory
- ▶ Low power consumption
- ▶ Multi-display support:
 - Dual 300 MHz DAC (VGA), resolution up to 1920x1080 (single display) or 1600x1200 (dual display)
 - Dual 18-bit DVO outputs (DVI via TMDS transmitter), resolution up to 1920x1080 (single display) or 1600x1200 (dual display)
 - Independent resolution and refresh rates for dual display outputs
- ▶ 2D Graphic accelerator:
 - 128-bit 2D graphic engine
 - 3 ROPs, BitBLT, transparent BLT, pattern BLT, color expansion, and line drawing
 - YUV-16/32-bit RGB conversion
- ▶ Video display layers:
 - Support 7 layers of display frames
 - 2 Hardware cursors, primary graphic, video, video alpha, alpha, secondary graphic
- ▶ Quick-rotation features allow for 90°, 180°, and 270° rotation of on-screen images

- ▶ Driver support for Windows® and Linux

- ▶ Designed and manufactured in Germany
- ▶ ISO 9000 certified quality management
- ▶ Long term availability
- ▶ Rugged solution (coating, sealing, underfilling on request)
- ▶ RoHS compliant 2002/95/EC
- ▶ Operating temperature 0°C to 70°C
- ▶ Humidity 5% ... 95% RH non condensing
- ▶ Altitude -300m ... +3000m
- ▶ Shock 15g 0.33ms, 6g 6ms
- ▶ Vibration 1g 5-2000Hz
- ▶ MTBF 75.8 years (DV1-1 DVI), 80.7 years (DV1-2 Dual VGA)
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

items are subject to changes

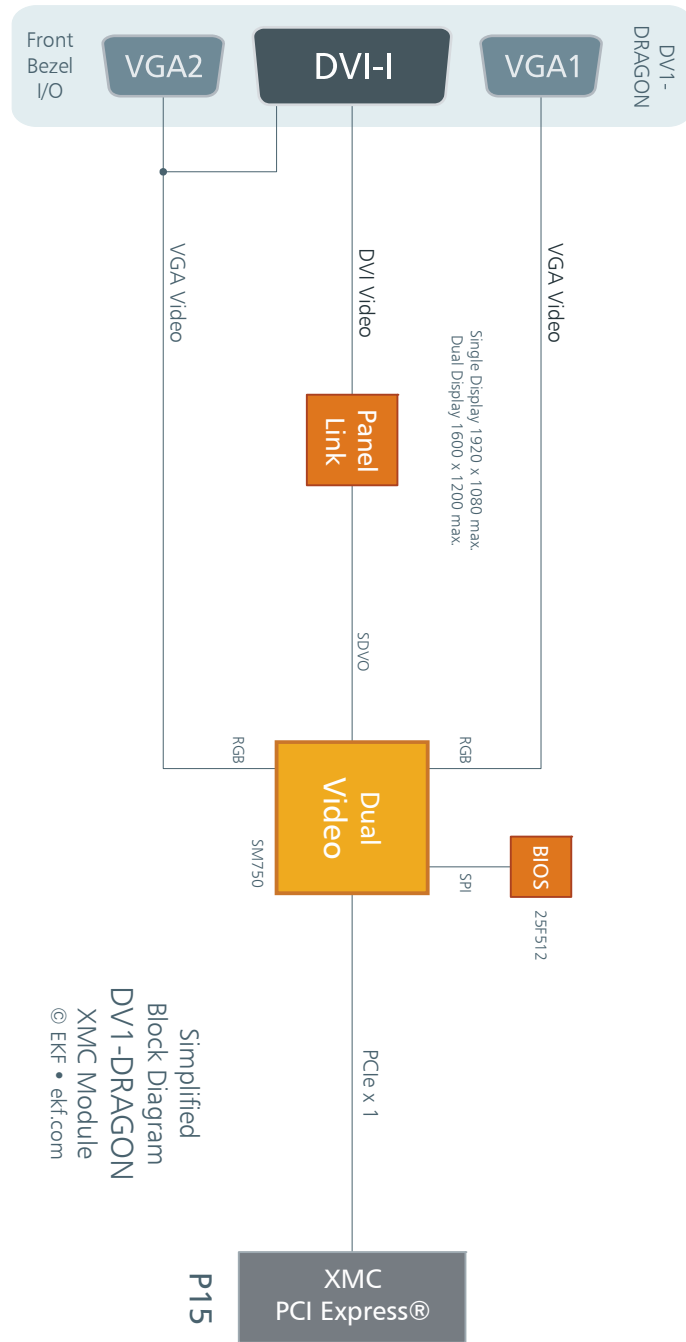


DV1-1-DRAGON • DVI-I Connector



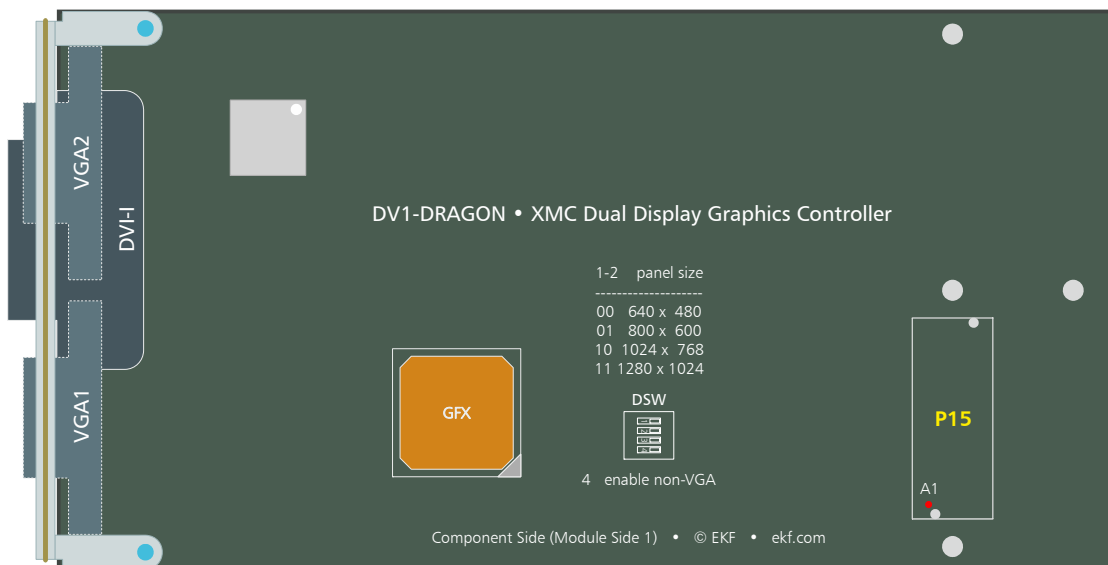
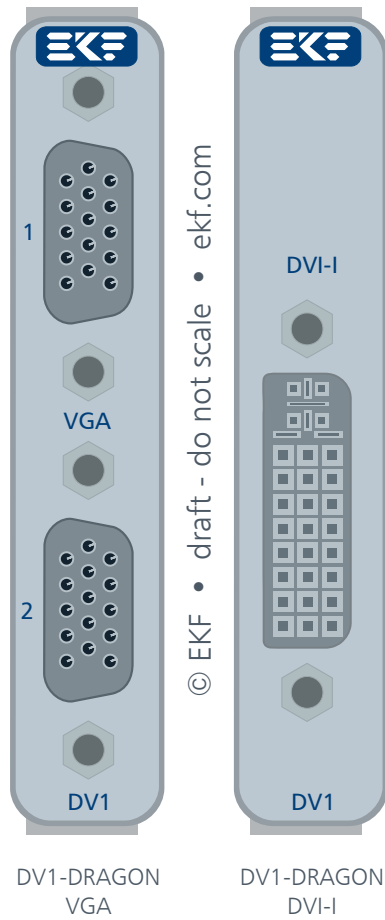
DV1-2-DRAGON • VGA Connector

Block Diagram

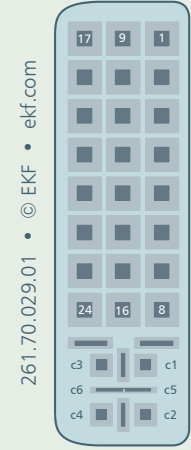


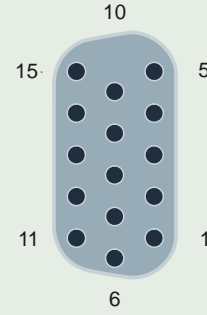
Simplified
Block Diagram
DV1-DRAGON
XMC Module
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Front Bezel Options



Front Bezel Connectors

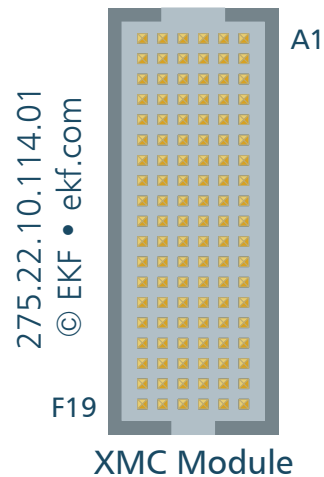
DVI						
 <p>261.70.029.01 • © EKF • ekf.com</p> <p>DVI</p>	17	TX0-	9	TX1-	1	TX2-
	18	TX0+	10	TX1+	2	TX2+
	19	GND	11	GND	3	GND
	20		12		4	
	21		13		5	
	22	GND	14	DDC_POW ¹⁾	6	DVI_DDC_SCL
	23	TXC+	15	GND	7	DVI_DDC_SDA
	24	TXC-	16	DVI_HP	8	VSYNC
		c3	BLUE	c1	RED	
		c6	GND	c5	GND	
	c4	HSYNC	c2	GREEN		

VGA1 & VGA2 (Option)		
	1	RED
	2	GREEN
	3	BLUE
	4	NC
	5	GND
	6	GND
	7	GND
	8	GND
	9	DDC_POW ¹⁾
	10	GND
	11	NC
	12	VGA_DDC_SDA
	13	HSYNC
	14	VSYNC
	15	VGA_DDC_SCL

¹⁾ DDC Power +5V 50mA

P15 Mezzanine Connector

The DV1-DRAGON is equipped with a high speed XMC mezzanine connector P15, mating with the host board J15 and establishing the data path (PCI Express®) and power link to the carrier. The pin assignment of P15/J15 is specified by VITA 42.3. The DV1-DRAGON is organized as single-lane single-link PCI Express® device.



As an option, the DV1-DRAGON can be equipped with a P15 connector according to the XMC 2.0 style, as defined by VITA 61.0. Carrier card and module connectors J15/P15 must match - VITA 61 and VITA 42 XMC connectors are not intermateable. Both connector styles can be easily distinguished from each other by the connector body colour as visual key.

Black = VITA 42 XMC
Off-white = VITA 61 XMC 2.0

Suitable carrier cards are available from EKF, e.g. the SK2-SESSION CompactPCI® Serial XMC module carrier board, or the CK2-SESSION, a carrier for CompactPCI® Classic systems.

Related XMC Carrier Cards	
SK2-SESSION CompactPCI® Serial	www.ekf.com/s/sk2/sk2.html
CK2-SESSION CompactPCI®	www.ekf.com/c/cpcc/ck2/ck2.html



Assembly SK2-SESSION w. DV1-1-DRAGON (DVI-I)



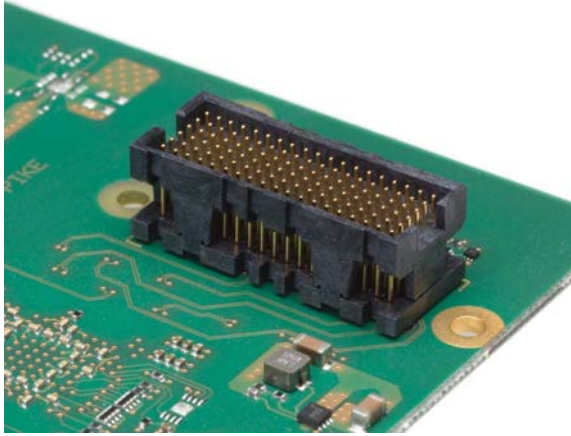
Assembly SK2-SESSION w. DV1-2-DRAGON (VGA)

XMC Connector P15 - PCIe Fabric • EKF Part No. 275.22.10.114.01						
	A	B	C	D	E	F
1	PETOP0	PETON0	+3.3V	<i>PETOP1</i>	<i>PETON1</i>	VPWR ²⁾
2	GND	GND	TRST# ¹⁾	GND	GND	MRSTI#
3	<i>PETOP2</i>	<i>PETON2</i>	+3.3V	<i>PETOP3</i>	<i>PETON3</i>	VPWR ²⁾
4	GND	GND	TCK	GND	GND	MRSTO#
5	<i>PETOP4</i>	<i>PETON4</i>	+3.3V	<i>PETOP5</i>	<i>PETON5</i>	VPWR ²⁾
6	GND	GND	TMS	GND	GND	+12V
7	<i>PETOP6</i>	<i>PETON6</i>	+3.3V	<i>PETOP7</i>	<i>PETON7</i>	VPWR ²⁾
8	GND	GND	TDI	GND	GND	-12V
9	<i>RFU</i>	<i>RFU</i>	<i>RFU</i>	<i>RFU</i>	<i>RFU</i>	VPWR ²⁾
10	GND	GND	TDO	GND	GND	GA0 ¹⁾
11	PEROP0	PERON0	MBIST#	<i>PEROP1</i>	<i>PERON1</i>	VPWR ²⁾
12	GND	GND	GA1 ¹⁾	GND	GND	MPRESENT#
13	<i>PEROP2</i>	<i>PERON2</i>	+3.3V_AUX	<i>PEROP3</i>	<i>PERON3</i>	VPWR ²⁾
14	GND	GND	GA2 ¹⁾	GND	GND	MSDA ¹⁾
15	<i>PEROP4</i>	<i>PERON4</i>	<i>RFU</i>	<i>PEROP5</i>	<i>PERON5</i>	VPWR ²⁾
16	GND	GND	MVMRO	GND	GND	MSCL ¹⁾
17	<i>PEROP6</i>	<i>PERON6</i>	<i>RFU</i>	<i>PEROP7</i>	<i>PERON7</i>	<i>RFU</i>
18	GND	GND	<i>RFU</i>	GND	GND	<i>RFU</i>
19	CLKP_XMC	CLKN_XMC	<i>RFU</i>	WAKE#	ROOT0#	<i>RFU</i>

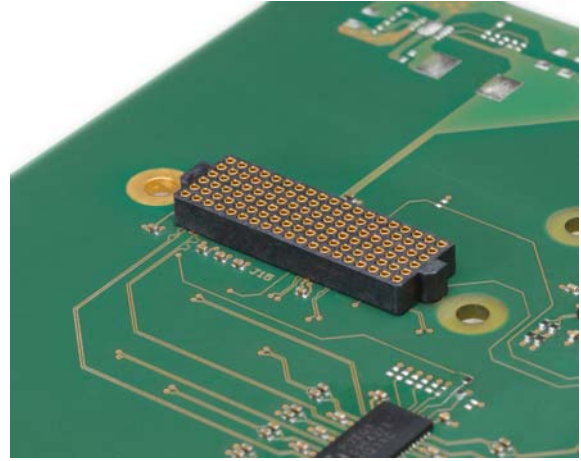
pin positions printed italic/gray: reserved by specification / not connected

- 1) Serial EEPROM not populated by default (no IPMI)
- 2) VPWR is not in use on the DV1-DRAGON (+3.3V only design)

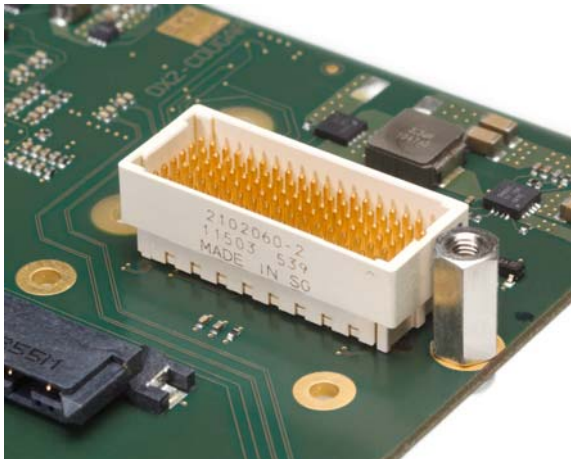
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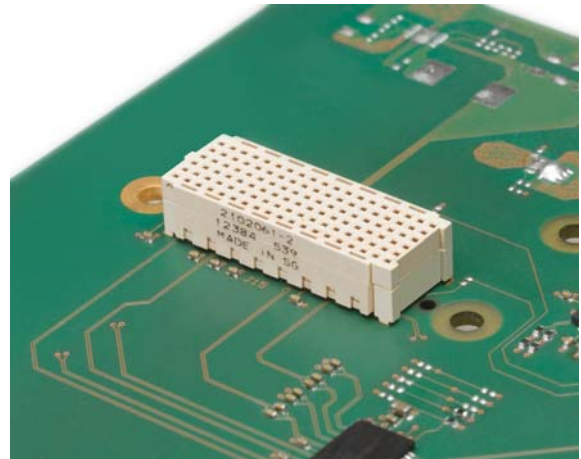
XMC Connector P15



XMC Connector J15



XMC 2.0 Connector P15



XMC 2.0 Connector J15

Configuration Options (Driver)			
Resolution	2D	Video	Dual Output
1024 x 768	✓	✓	✓
1280 x 1024	✓	✓	✓
1600 x 1200	✓	✓	✓
1920 x 1080	✓		

Resolution Options (BIOS)	
Resolution	Default Strapping
640 x 480	
800 x 600	
1024 x 768	✓
1280 x 1024	

DV1-DRAGON Version Differences					
Module Version	DVI-I	VGA	max. Res.	Dual View	Dual Display
DV1-1-DRAGON	1		2 x 1600 x 1200 (4:3) or 1 x 1920 x 1080 (16:9)	✓	
DV1-2-DRAGON		2	2 x 1600 x 1200 (4:3) or 1 x 1920 x 1080 (16:9)		✓



Adapter DVI-I to DVI-D & VGA
908.58.01.01



DV1-DRAGON on SK2-SESSION Carrier in a Small Industrial System

Industrial Computers Made in Germany
boards. systems. solutions.

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