DOMINO™ series

High-quality analog image acquisition boards

DOMINO Iota™ **DOMINO Alpha 2™** **DOMINO Delta™**

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EURESYS™
Excellence in vision

DOMINO™ series

The Domino series is a range of PCI and CompactPCI frame grabbers dedicated to machine vision. The Domino boards are compatible with standard and non-standard analog cameras.

The **Domino Iota** is the entry-level frame grabber with **one camera connector.** It acquires images from one single-tap monochrome analog camera.

The **Domino Alpha 2** is a **two-camera-connector** board. It provides concurrent acquisition from two single-tap cameras, or acquisition from one dual-tap analog camera.

The **Domino Delta** is a high-end CompactPCI frame grabber equipped with **four camera connectors.** It acquires images from up to four single-tap cameras selectable in twos.

The Domino series boards support any system function associated to industrial acquisition, such as **asynchronous reset, exposure and strobe control. TTL I/O lines** are also provided for easy system integration.

The Domino series boards come with the **MultiCam driver**, which provides a comprehensive way to control the camera and system features. MultiCam exposes a driver API (Application Programming Interface) defining a uniform acquisition control layer for all Euresys' frame grabbers. The Domino boards and the MultiCam driver are compatible with **eVision**, the image analysis library from Euresys, offering an extended set of functions optimized for machine vision applications.

- ***Progressive or interlaced single-tap or dual-tap cameras***
- ***High-resolution -mega-pixel- and double-speed cameras***
- ***8-bit 32 MHz A/D converters***
- ***Asynchronous reset, shutter control, external trigger and strobe control***
- ***8-Mbyte frame buffer***
- ***Real-time look-up tables***

	DOMINO Iota	*DOMINO Melody*	*DOMINO Alpha 2*	*DOMINO Harmony*	*DOMINO Delta*
Form factor	32-bit, 33 MHz PCI	32-bit, 33 MHz PCI Low Profile compatible	32-bit, 33 MHz PCI	64-bit, 66 MHz PCI	32-bit, 33 MHz cPCI
Signal	Analog	Analog	Analog	Analog	Analog
Standard	CCIR / RS170 Non-standard	CCIR / RS170 Non-standard	CCIR / RS170 Non-standard	CCIR / RS170 Non-standard	CCIR / RS170 Non-standard
Camera connectors	1	1	2	2	4
Single-tap cameras	1	1	Up to 4	2	Up to 4
Dual-tap cameras	-	-	Up to 2	-	-
RGB (triple-tap) cameras	-	-	-	1	-
Progressive scan	✔	✔	✔	✔	✔
Max pixel clock frequency	32 MHz	40 MHz	32 MHz	40 MHz	32 MHz
Area scan	✔	✔	✔	✔	✔
Frame buffer	8-Mbyte	16-Mbyte	8-Mbyte	32-Mbyte	8-Mbyte
D³ Technology™	-	✔	-	✔	-

Bus mastering

All Euresys frame grabbers are PCI bus mastering agents that directly store the acquired images into the PC physical memory without CPU involvement. As a unique feature, the Euresys frame grabbers automatically recover the scatter-gather virtual memory mapping to present the data as a regular bitmap image in a user allocated memory buffer.

DOMINO Iota™

One camera connector for:
- One single-tap camera
Multi-mode synchronization system, including pixel clock and PLL locking
One 8-bit 32 MHz A/D converter
PCI bus: 32 bits, 33 MHz, 3 V or 5 V signaling

The Domino Iota is a high-quality and cost-effective board with one camera connector. It acquires images from a **monochrome analog camera**. This single-camera frame grabber is an ideal solution for **cost-sensitive applications inspecting fast moving objects**.

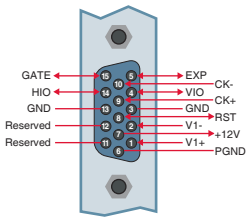
One 8-bit 32 MHz A/D converter

The Domino Iota is equipped with an **8-bit A/D converter**. The maximum sampling rate of **32 MHz** allows the board to support **double-speed** cameras. This Domino frame grabber offers **one 8-bit input look-up table** and a **programmable input filter** (20, 10 or 5 MHz). The **controls of the gain and offset** are also programmable.

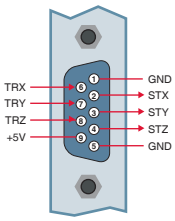
Camera and I/O connectors

The Domino Iota bracket offers:

- one HD15 video connector
- one DB9 connector



Camera connector
HD15



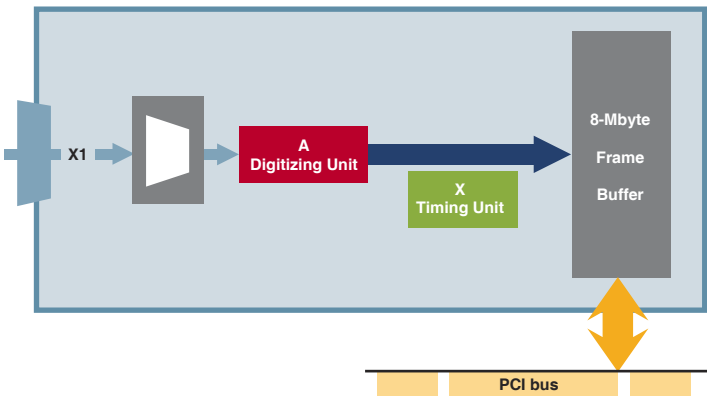
System connector
DB9

Camera support

Beside standard **CCIR** and **RS170** cameras, the Domino Iota supports any kind of **single tap analog camera**: with **progressive or interlaced scanning**, synchronous timing or **asynchronous reset, shutter control or strobe control**. The **high-resolution** capability of the board is compatible with top-notch analog cameras (mega-pixel cameras are supported). A **multi-mode synchronization** system is available and includes the **pixel clock** and **PLL locking**. The Domino series boards interface a wide range of cameras from many manufacturers. For a complete list, please refer to our web site.

32-bit 33 MHz PCI bus

The Domino Iota is 32-bit, 33 MHz PCI bus frame grabbers with 3V or 5V signaling. Direct Memory Access and PCI bus mastering are supported.



DOMINO Alpha 2™

Two camera connectors for:
- ***One dual-tap or two single-tap concurrent cameras***
- ***Four single-tap cameras selectable in twos***
- ***Two selectable dual-tap cameras***

Multi-mode synchronization system, including pixel clock and PLL locking
Two 8-bit 32 MHz A/D converters
PCI bus: 32 bits, 33 MHz, 3 V or 5 V signaling

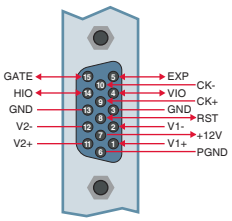
The Domino Alpha 2 features two camera connectors and can acquire images from one dual-tap or **two monochrome concurrent analog cameras**. This Domino also acquires images from **up to four single-tap cameras** selectable in twos or two selectable dual-tap cameras. The Alpha 2 is the frame grabber to acquire detailed images or to inspect objects on-the-fly.

Two 8-bit 32 MHz A/D converters

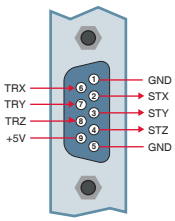
The Domino Alpha 2 is equipped with **two 8-bit A/D converters**. The maximum sampling rate of **32 MHz** allows the board to support **double-speed** cameras. This Domino frame grabber also offers **two 8-bit input look-up tables** and a **programmable input filter** (20, 10 or 5 MHz). The **controls of the gain and offset** are programmable.

Camera and I/O connectors

The Domino Alpha 2 bracket offers two HD15 camera connectors and one DB9 I/O connector. The **HD15 connectors** are compliant with the Euresys-defined analog camera connector and includes camera power supply. The **DB9 connector** incorporates three external trigger and flash strobe TTL lines. These connectors are compatible with the Domino Iota, simplifying cable manufacturing.



Camera connector
HD15



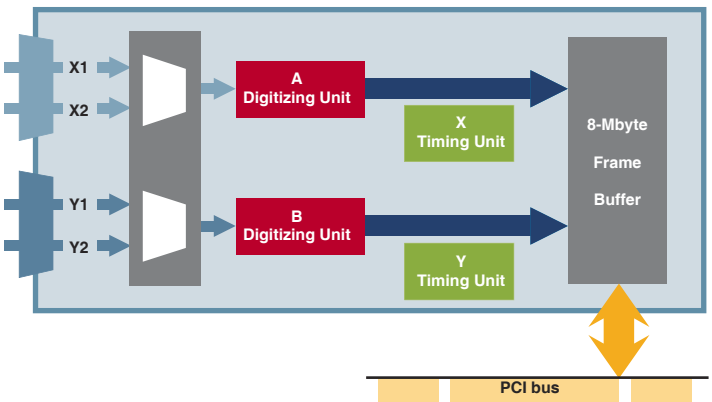
System connector
DB9

Camera support

Beside standard **CCIR** and **RS170** cameras, the Domino Alpha 2 also supports any kind of **single-tap or dual-tap analog camera**, with **progressive or interlaced scanning**, synchronous timing or **asynchronous reset** and asynchronous shutter control. The **high-resolution** capability of the board is compatible with top-notch cameras (mega-pixel cameras are supported).
Two single-tap cameras can be used **concurrently and independently** with one Domino Alpha 2. Each of them has its own trigger and strobe line, and they acquire their images into two separate buffers in the PC memory. The board can share efficiently the two digitizing and timing units between up to four single-tap cameras or two dual-tap cameras.
A **multi-mode synchronization** system is available and includes **pixel clock** and **PLL locking**. The Domino series boards interface a wide range of cameras from various manufacturers. For a complete list, please refer to our web site.

On-board memory

Although it is able to transfer acquired images in real-time to PC memory, Alpha 2 incorporates an **8-Mbyte on-board frame buffer**, ensuring that no image will be lost, even when using the fastest cameras.



32-bit 33 MHz PCI bus

The Domino Alpha 2 is 32-bit 33 MHz PCI bus frame grabbers with 3V or 5V signaling. Direct Memory Access and PCI bus mastering are supported.

DOMINO Delta™

Four camera connectors for:
- Four single-tap cameras selectable in twos
- Two single-tap concurrent cameras
Master mode, H-V synchronized cameras
Two 8-bit 32 MHz A/D converters
CompactPCI bus: 32 bits, 33 MHz, 6U/4HP, 3 V or 5 V signaling

The Domino Delta is a **four-camera-connector frame grabber** with two analog-to-digital converters. The board typically acquires images from four single-tap cameras selectable in twos. The Domino Delta also provides concurrent acquisition from two single-tap cameras.

This board interfaces a large variety of **single-tap area-scan analog cameras in master mode** and efficiently makes use of features such as **asynchronous reset, exposure control, external trigger** and **strobe control**. The Domino Delta is a high-end frame grabber offering the robustness of the CompactPCI format to industrial applications.

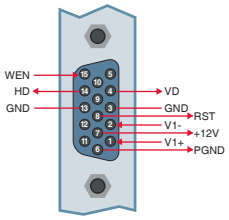
Two 8-bit 32 MHz digitizers

The Domino Delta is equipped with **two 8-bit A/D** converters. The maximum sampling rate of **32 MHz** allows the Domino Delta to support **double-speed cameras**.
This Domino frame grabber also offers two **8-bit input look-up tables**, a **selectable input filter** (20, 10 or 5 MHz) and **programmable controls for gain and offset**.

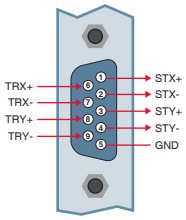
Camera and I/O system connectors

The Domino Delta bracket offers **four HD15 female camera connectors** compliant with the Euresys-defined analog camera connector and **including the camera power supply**.
The Domino Delta is equipped with 2 input and 2 output lines available on a **DB9 male connector** for easy integration in the user's application.

- **Two opto-isolated outputs** are available for the safe control of external equipment
- **Two opto-isolated input lines** allow a flexible control of the image acquisition by the external system



Camera connector
HD15



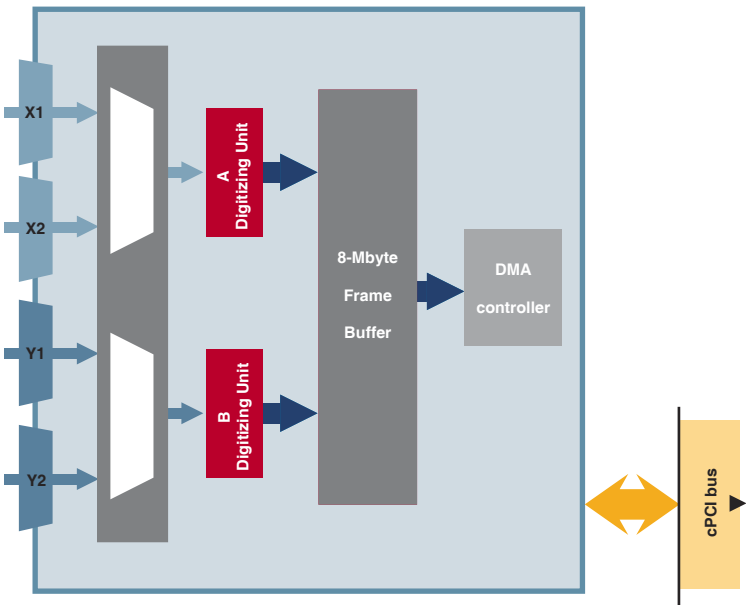
System connector
DB9

Camera support

Domino Delta interfaces a **large variety of single-tap area-scan analog cameras** in master mode and efficiently makes use of features such as asynchronous reset, exposure control, external trigger and strobe control.

An up-to-date list of supported cameras is available on the web site at **www.euresys.com**.

To work together, a camera and a frame grabber must operate with an identical timing reference. This timing reference is originated in the camera (analog or digital synchronization) or in the frame grabber (master mode synchronization). Domino Delta always **sends reference timing signals to the camera** and acquire images from up to four cameras in this **master synchronization mode**.



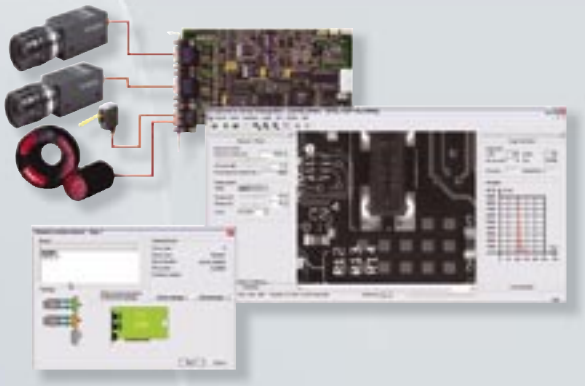
DOMINO™ series software support

MultiCam™

The **MultiCam driver** enables the consistent control of several Euresys frame grabbers, using an arbitrary **number of cameras**, from **one or several software applications**. MultiCam allows defining **channels** linking cameras to buffers in the PC memory. The MultiCam channel **identifies all parameters** ruling the acquisition process from a camera.

Every camera feature, such as its type, resolution or image format, is described and controlled through **simple parameters**, considerably easing the camera control task. For each channel-controlled camera, a set of dedicated parameters is created from a CAM file.

Euresys delivers pre-defined files for many popular cameras; still the user can customize his **CAM files**. MultiCam complies with most development environments. The native API is **standard C. ActiveX controls** enable the use of Visual Basic.



MultiCam™ for Windows and Linux

The MultiCam driver runs under Windows 2000, XP, XP Embedded, Server 2003 and Linux Suse 10. It allows Euresys customers to combine the ease-of use of the MultiCam driver and the eVision software tools with the cost-effectiveness of Linux.

EasyMultiCam™

Offered as a part of the **eVision** tools suite, **EasyMultiCam** is **a set of powerful C++ and .NET classes** embedding the whole MultiCam functionality. The **object oriented** eVision functions define image containers suitable for **image processing and analysis**. Implementing the image capture code into a machine vision application is now straightforward.

Ordering Information

PRODUCT NAME	PRODUCT DESCRIPTION	PART NUMBER
Frame grabbers		
DOMINO Iota	Single input analog frame grabber	1162
DOMINO Melody	Single input analog frame grabber based on D³	1167
DOMINO Alpha 2	Dual input frame grabber	1161
DOMINO Harmony	Dual input analog frame grabber based on D³	1168
DOMINO Delta	Quad input analog cPCI frame grabber	1163

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