LEONARDO™ LS
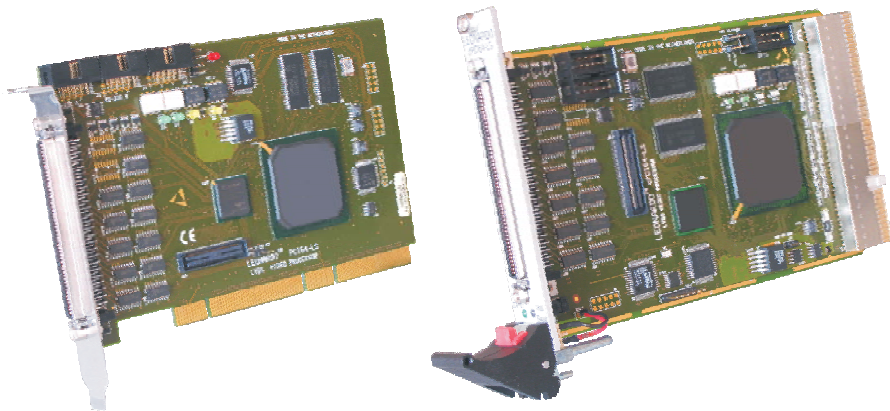
LVDS digital video (RS-422/RS-644)

PCI-X
compatible

LEONARDO™ LS Digital Video Processor Line

The leonardo™ LS line is the real solution for fast LVDS digital video acquisition and realtime processing of the incoming video data. The product line comes in a PCI and a Compact PCI model based on a very strong architecture.

The common digital video interface is RS-644 (optionally RS-422) compatible, with upto 40 bits data. A dual channel mode is offered to acquire two independent 16 bit video input streams. The computer bus interface is electrically compatible with PCI 2.2 and mechanically with standard PCI and Compact PCI. The bus interface is PCI-X compatible (64 bit/66 Mhz), resulting in an extreme transfer rate of 528 MB/s on the computer bus.

The leonardo™ is equiped with a state of the art Xilinx FPGA, offering realtime preprocessing of the video data, such as e.g. contrast stretching in gray value domain with LUT, RGB mosaic color restoration and random 2D convolution filters. The video data is stored in a large on board memory. The maximum image resolution is 64k*64k pixels.
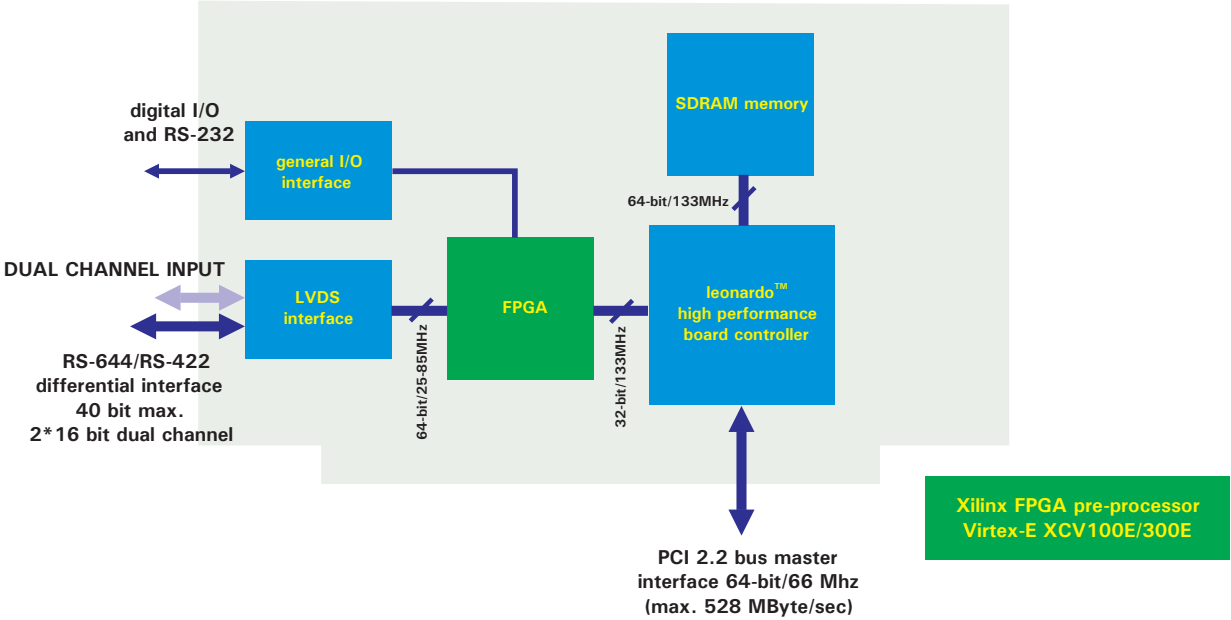
The leonardo™ LS family is supported for Windows[R], Linux, Realtime Linux, Solaris[R] and QNX[R].

Available models:

model:	LVDS interface RS-644 (RS-422)	on board memory	bus
PCI64-LS	16/24/32/36/40 data bit	128/256 MByte	PCI 64bit/66MHz (PCI-X compatible)
cPCI64-LS	16/24/32/36/40 data bit	128/256 MByte	Compact PCI 64bit/66MHz (3U board)

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Features

SYSTEM OVERVIEW of the Leonardo™ LS Digital Video Processor

digital I/O and RS-232

general I/O interface

SDRAM memory

64-bit/133MHz

DUAL CHANNEL INPUT

LVDS interface

FPGA

leonardo™ high performance board controller

RS-644/RS-422 differential interface 40 bit max. 2*16 bit dual channel

64-bit/25-85MHz

32-bit/133MHz

Xilinx FPGA pre-processor Virtex-E XCV100E/300E

PCI 2.2 bus master interface 64-bit/66 Mhz (max. 528 MByte/sec)

LVDS differential interface	**2*16 bit Dual Channel** 24 bit 32/36 bit 40 bit (optional) area/line scan modes	FPGA	Xilinx Virtex-E XCV100E / XCV300E
Image size	64k*64k pixels max	DMA channels	8 channels with extended features
		SDRAM memory	128 or 256 MByte SDRAM
Pixel clock (maximum)	16 bit-66 MHz 2*16 bit-40 MHz each 24 bit-66 MHz 32/36 bit-40 MHz 40 bit-40 MHz	Onboard Bus	133 MHz bus frequency max throughput 1.064 GByte/sec
PCI controller	PCI 2.2 compatible Master / slave 3.3 and 5 Volt compatible	User I/O	2 isolated digital inputs 2 isolated digital outputs 2*RS-232 serial channels
PCI modes	64bit/66MHz 64bit/33MHz 32bit/66MHz 32bit/33MHz		
PCI Bustransfer	max. 528 MByte (approx. 480 MB sustained)		for more technical details, please refer to the hardware manual

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LVDS connector pinning

Pin	36-bit (default)	DUAL 16-bit (default)	40-bit (optional)	Input/Output for Frame Grabber
1,2	D0	DA0	D0	Input
3,4	D1	DA1	D1	Input
5,6	D2	DA2	D2	Input
7,8	D3	DA3	D3	Input
9,10	D4	DA4	D4	Input
11,12	D5	DA5	D5	Input
13,14	D6	DA6	D6	Input
15,16	D7	DA7	D7	Input
17,18	D8	DA8	D8	Input
19,20	D9	DA9	D9	Input
21,22	D10	DA10	D10	Input
23,24	D11	DA11	D11	Input
25,26	D12	DA12	D12	Input
27,28	D13	DA13	D13	Input
29,30	D14	DA14	D14	Input
31,32	D15	DA15	D15	Input
33,34	LEN	LEN_A	LEN	Input
35,36	FEN	FEN_A	FEN	Input
37,38	GND	GND	GND	
39,40	PCLK	PCLK_A	PCLK	Input
41,42	D32	LEN_B	D32	Input
43,44	D33	FEN_B	D33	Input
45,46	D34	PCLK_B	D34	Input
47,48	D35	-	D35	Input
49				
50	GND	GND	GND	
51,52	D16	DB0	D16	Input
53,54	D17	DB1	D17	Input
55,56	D18	DB2	D18	Input
57,58	D19	DB3	D19	Input
59,60	D20	DB4	D20	Input
61,62	D21	DB5	D21	Input
63,64	D22	DB6	D22	Input
65,66	D23	DB7	D23	Input
67,68	D24	DB8	D24	Input
69,70	D25	DB9	D25	Input
71,72	D26	DB10	D26	Input
73,74	D27	DB11	D27	Input
75,76	D28	DB12	D28	Input
77,78	D29	DB13	D29	Input
79,80	D30	DB14	D30	Input
81,82	D31	DB15	D31	Input
83,84	SER_TFG1	SER_TFG1	D36	Input
85,86	SER_TFG2	SER_TFG2	D37	Input
87	TTL_EXPO1	TTL_EXPO1	TTL_EXPO1	Output
88	TTL_EXPO2	TTL_EXPO2	TTL_EXPO2	Output
89,90	GPIN_0	GPIN_0	D38	Input
91,92	GPIN_1	GPIN_1	D39	Input
93,94	SER_TC1	SER_TC1	-	Output
95,96	EXPO1	EXPO1	EXPO1	Output
97,98	EXPO2	EXPO2	EXPO2	Output
99,100	SER_TC2	SER_TC2	-	Output

Ordering Information

Order code information leonardo™ LS series:

model:	order code:
PCI64-LS	***XXX*64-LS-*mode-data-logic-temp-mem***
cPCI64-LS	

	XXX	PCI or cPCI (defines computer bus and board format)
	mode	644 - RS-644 LVDS compatible (default)
		422 - RS-422 LVDS compatible
	data	36 - 36 bit/2*16 bit LVDS input (default)
		40 - 40 bit LVDS input
	logic	X100 - Xilinx Virtex-E XCV100E mounted (default)
		X300 - Xilinx Virtex-E XCV-300E mounted
	temp	C - commercial temperature range, 0 to +70°C (default)
		I - industrial temperature range, -40 to +85°C
	mem	128 - 128 MByte SDRAM mounted (default)
		256 - 256 MByte SDRAM mounted

example: PCI64-LS-644-36-X100-C-256
defines a PCI model with all default options, but 256 MB SDRAM

Important remark, industrial temperature limitations: on board bus running at 100 MHz, SDRAM max.128 MByte, max camera pixelclock 40 MHz, for availablity of industrial temperature range models please contact ARVOO or your local distributor

Your Distributor:

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