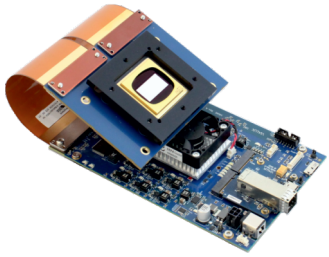
UltraSpeed V-Modules

Options: UV VIS NIR DLS

As fast as possible: UltraSpeed V-Modules for Texas Instruments high-performance DLP® technology



High-performance DLP (Digital Light Processing) from Texas Instrument is a technology of MEMS spatial light modulators that goes far beyond standard multimedia projections and automotive display applications.
With the V-Module series, ViALUX offers a broad product range that stands out from ordinary DLP projectors, but offers the highest performance and flexibility within the DLP chipset family.

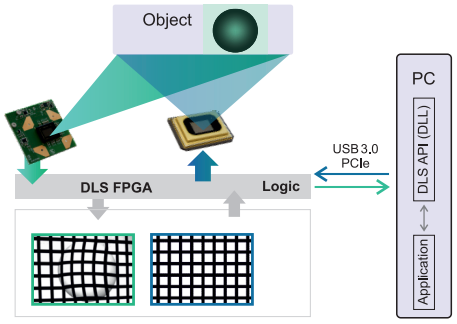
The existing Hi-Speed (USB 2.0) and SuperSpeed (USB 3.0) performance classes of the V-Modules are supplemented by our next generation: UltraSpeed V-Modules (USB 3.0 and PCIe x4 Gen3).

UltraSpeed V-Modules allow users to transfer image data at the highest rate currently available on the market. All UltraSpeed V-Modules are equipped with an external PCIe interface. This, in conjunction with the expandable on-board DDR4 memory enables the user to achieve high-performance streaming between PC and V-Module. In case of the V-7002, data streaming is even faster than the switching rate of the DMD. The possibility of stable data transfer between the module and the PC over long distances via fiber optical cables rounds off the list of advantages.

V-7002

* Switching rate at 1 bit B/W with full array | ** Preliminary

In addition, the UltraSpeed V-Modules are equipped with a connection option for an image sensor that supports our DLS (Direct Link Sensor) concept – perfectly synchronized DLP projection with corresponding image acquisition within a single FPGA logic.



Powered by the recognised ALP software the V-Modules offer great versatility and are well suited for industrial and academic research, as well as highly reliable OEM components for mass production.
The PCIe and USB device drivers support all current Microsoft Windows® operating systems and guarantee smooth integration with wide variety of desktop PCs. The V-Module software ALP-5.0, a DLL library, fits seamlessly into standard programming platforms like C++, C#, Visual Basic (.NET), Python, MATLAB, LabVIEW, and other development platforms and is fully compatible to all former ALP-4 versions.*

Five UltraSpeed V-Modules with different wavelengths are available. Depending on the chipset, the UltraSpeed V-Modules differ in the extension board, which is connected with one or two flex cables for data exchange.

V-7002	**VIS/UV**	with 0.7" XGA DMD for visible or ultra-violet light (DLP7000VIS/DLP7000UV)
V-9502	**VIS/UV**	with 0.95" 1 080p DMD for visible or ultra-violet light (DLP9500VIS/DLP9500UV)
V-650L02	**NIR**	with 0.65" NIR WXGA DMD for near-infrared light (DLP650LNIR)
V-6502	**VIS**	with 0.65" 1 080p DMD for visible light (DLP6500VIS)
V-9002	**VIS/UV**	with 0.9" WQXGA DMD for visible or ultra-violet light (DLP9000XVIS/DLP9000XUV)

Optionally available are:

- Various flex cable lengths and form factors
- RAM extension to 256 Gbit (32 GB)
- Different image sensors called ViALUX V-Cams
- Fiber optical cables (up to 100m)

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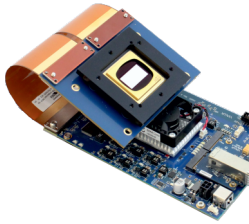
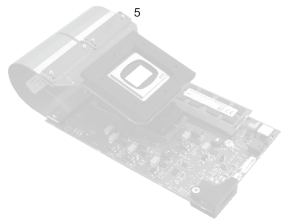
UltraSpeed V-Modules specifications

	V-7002	V-9502	V-650L02	V-6502	V-9002
	 V-Cam option available				[5]	 [5]
Chipset	DLP7000 & DLPC410	DLP9500 & DLPC410	DLP650LNIR & DLPC410	DLP6500 & DLPC910	DLP9000X & DLPC910
Type A DMD	0.7" XGA	0.95" 1 080p	0.65" WXGA	0.65" 1 080p	0.9" WQXGA
Window Options	VIS, UV	VIS, UV	NIR	VIS	VIS, UV
Micromirror Array	1024 x 768	1 920 x 1 080	1 280 x 800	1 920 x 1 080	2 560 x 1 600
Micromirror Pitch	13.7 µm	10.8 µm	10.8 µm	7.6 µm	7.6 µm
Active Mirror Array Area	14.0 x 10.5 mm²	20.7 x 11.7 mm²	13.8 x 8.6 mm²	14.5 x 8.2 mm²	19.4 x 12.1 mm²
Control Board Dimensions	162 x 99 mm²	162 x 99 mm²	162 x 99 mm²	162 x 99 mm²	162 x 99 mm²
DMD Board Dimensions	67 x 50 mm²	102 x 83 mm²	63 x 47 mm²	101 x 78 mm²	95 x 88 mm²
Flexible Cable Length	105 / 283 / 573 mm	105 / 283 / 573 mm	105 mm	105 / 283 / 573 mm	105 / (283) mm
RAM Capacity on Board	128 Gbit / 256 Gbit	128 Gbit / 256 Gbit	128 Gbit / 256 Gbit	128 Gbit / 256 Gbit	128 Gbit / 256 Gbit
Binary Patterns on Board	174 762 / 349 524	62 137 / 124 274	111 848 / 223 696	62 137 / 124 274	33 554 / 67 108
On-board RAM bandwidth[1]	12 800 MB/s	12 800 MB/s	12 800 MB/s	12 800 MB/s	12 800 MB/s
RAM bandwidth needed by DMD[2]	2 235 MB/s	4 880 MB/s	1 377 MB/s	2 817 MB/s	6 650 MB/s
Hardware Trigger	master / slave	master / slave	master / slave	master / slave	master / slave
Controller Suite	ALP-5.0	ALP-5.0	ALP-5.0	ALP-5.0	ALP-5.0
Max. Switching Rate 1bit B/W	22 727 Hz	17 857 Hz	10 752 Hz	10 309 Hz	12 987 Hz
Max. Switching Rate 6bit Gray	1 091 Hz	987 Hz	856 Hz	871 Hz	1 013 Hz
Max. Switching Rate 8bit Gray	290 Hz	266 Hz	258 Hz	266 Hz	303 Hz
Max. Switching Rate 12bit Gray	18 Hz	17 Hz	17 Hz	17 Hz	20 Hz
PC Interface	USB 3.0 / PCIe	USB 3.0 / PCIe	USB 3.0 / PCIe	USB 3.0 / PCIe	USB 3.0 / PCIe
PC Transfer Rate[3]	2 800 - 5 300 fps (USB 3.0) 23 000 fps (PCIe)[4]	1 000 - 2 500 fps (USB 3.0) 8 200 fps (PCIe)[4]	900 - 2 300 fps (USB 3.0) 7 400 fps (PCIe)[4]	1 000 - 2 500 fps (USB 3.0) 8 200 fps (PCIe)[4]	600 - 1 500 fps (USB 3.0) 4 900 fps (PCIe)[4]
Camera Port	1x	1x	1x	1x	1x
Camera Cable Length	600 / 250 mm	600 / 250 mm	600 / 250 mm	600 / 250 mm	600 / 250 mm
Image Sensor (on request)	IMX174 / 422 / 536	IMX174 / 422 / 536	IMX174 / 422 / 536	IMX174 / 422 / 536	IMX174 / 422 / 536
Controller Suite (Camera Option)	DLS-API	DLS-API	DLS-API	DLS-API	DLS-API

[1] Ideal value, will be reduced by overhead for refresh and access time.
[2] With maximal switching rate
[3] Typical value, can vary depending upon PC.
[4] Preliminary
[5] Product images coming soon.

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