

COGNEX

DSMax™ Frame Grabber Installation and Reference

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Precautions

Reduce the risk of injury or equipment damage by observing the following precautions when installing Cognex products:

- Route all cables and wires away from high current or high-voltage power sources to reduce the risk of damage or malfunction due to over-voltage, line noise, electrostatic discharge (ESD), power surges, or other irregularities in the power supply.
- Do not install Cognex products where they are exposed to environmental hazards such as excessive heat, dust, moisture, humidity, impact, vibration, corrosive substances, flammable substances, or static electricity.
- Changes or modifications not expressly approved by the party responsible for regulatory compliance could void the user's authority to operate the equipment.
- Include service loops with all cable connections.
- Ensure that the cable bend radius begins at least six inches from the connector. Cable shielding can be degraded or cables can be damaged or wear out faster if a service loop or bend radius is tighter than 10X the cable diameter.
- This device is certified for office use only and if used at home, there can be frequency interference problems.
- Use this device in accordance with the instructions in this documentation.
- All specifications are for reference purposes only and can change without notice.

DSMax Frame Grabber

The DSMAX Frame Grabber is a PCIe card that gathers, stores, and processes line-profile scans from the DSMAX sensor at rates up to 18 kHz using the CoaXPress protocol. Two coaxial cables attach a DSMax sensor to the frame grabber with BNC connectors.

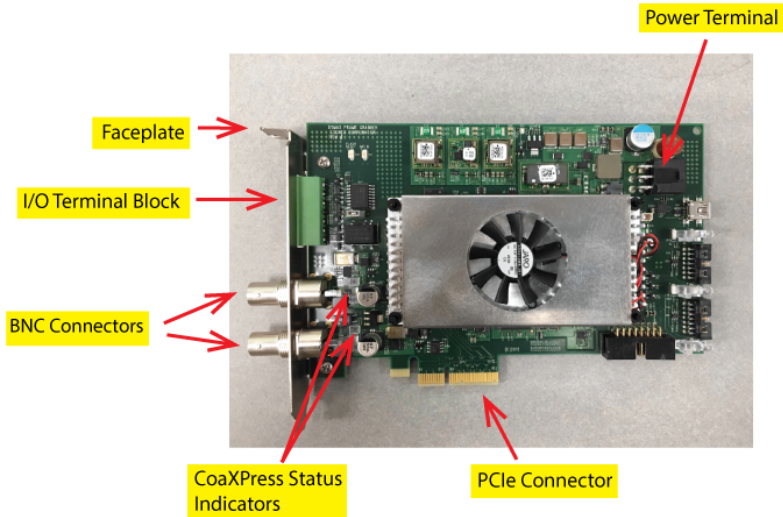


The DSMAX Frame Grabber has two general operating states:

	Connection to DSMAX	Active Data
Mode	Sensor Head	Transfer
On	√	x
Operating	√	√

The DSMAX Frame Grabber can be installed in any PC that meets the specifications detailed in *Specifications* on page 5.

Layout



Specifications

Refer to the following table for DSMax frame grabber specifications:

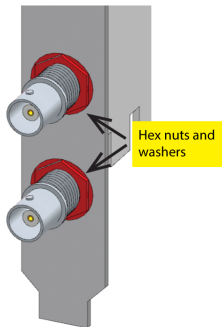
Specification	DSMAX Frame Grabber	
Ratings	Voltage: +12 VDC Current: 2.5 A MAX Power: 30W	
Operating Conditions	0°C to 60°C	
Typical IPC Configuration	Category	Description
	Processor	Intel Xeon Processor E5-1630 v3 (4C, 3.7 GHz, Turbo, HT, 10M, 140W)
	Windows OS	Refer to your VisionPro documentation for supported Windows OS
	Video Card 1	NVIDIA Quadro K620 2GB (DP, DL-DVI-I) (1DP to SL-DVI adapter)
	Storage 1	2 TB 3.5" Serial-ATA (7,200 RPM) Hard Drive
	Storage 2	SHPM2280P2H 480GB SSD
	PCIe slots	x4 Gen2 (2 for dual frame grabbers)
	Components with equivalent specifications can substitute for any of these items	

Specification	DSMAX Frame Grabber	
Approvals	CE, KCC, CCC; CAN/CSA C22.2 No. 61010-1, UL 61010-1, EN 61010-1	
Input / Output	Port	Description
	2X BNC	Coaxial Cable BNC Connector (CoaXPress Protocol)
	Terminal Block	7 Pos 3.81mm pitch Through Hole Header
Regulatory Model	R00042	
Manufacturer	Cognex Corporation One Vision Drive Natick, MA 01760 USA	

Installation

To install a DSMax frame grabber, perform the following steps:

1. Wear a grounded, static-dissipating wrist strap for ESD protection.
2. Turn off the PC and remove its cover.
3. Select a free PCIe x4 Gen2 expansion slot.
4. Remove the slot cover and store it for later use.
5. Remove the hex nut and washer (highlighted) from the base of each BNC connector on the faceplate of the frame grabber:



6. Press the DSMAX frame grabber into its PCIe slot until it is firmly seated.

7. Re-install the hex nut and washer to the base of each BNC connector to help secure the DSMax frame grabber to the chassis of the PC.
8. Connect a +12V DC power supply to the 6-pin Molex PCIe auxiliary power connector.
9. Replace the cover of the PC.
10. Connect the coaxial cables to the Frame Grabber using the BNC connectors.



DSMax does not support single-cable acquisition.

11. Turn on your PC.
12. Launch your VisionPro software and configure the DSMax sensor as an image source.

Refer to your VisionPro documentation for details.

Indicator Lights


The CoaXPress status indicator lights directly behind the BNC connectors (reference Page 4) follow specific color schemes detailed by CoaXPress standard Version 1.1.

CoaXPress States	CoaXPress Indicator Light
No power	Off
System booting	Solid Orange
Connection detection in progress, PoCXP active	Fast flash alternate green / orange shown for a minimum of 1s even if the connection detected is faster
Device / Host incompatible, PoCXP active	Slow flash alternate red / green
PoCXP over-current (Host only)	Solid red
Device / Host connected, but no data being transferred	Solid green
Device / Host connected, waiting for event (e.g. trigger, exposure pulse)	Slow pulse orange
Device / Host connected, data being transferred	Fast flash green
Error during data transfer (e.g. CRC error, single bit error detected)	500ms red pulse in case of multiple errors, there shall be at least two green fast flash pulses before the next error is indicated
System error (e.g. internal error)	Fast flash red

Input/Output Signals

Refer to your installed VisionPro documentation for details on how to connect an encoder and hardware triggers to the DSMax frame grabber.

The DSMax frame grabber supports the I/O signals as shown in the following figure. The frame grabber supports a maximum input voltage of 24V.

	Signal	Description
	Encoder PhA+	Floating input. Use this when you need to use a single ended input.
	Encoder PhA-	Weak pull up to 2.5V.
	Encoder PhB+	Floating input. Use this when you need to use a single ended input.
	Encoder PhB-	Weak pull up to 2.5V.
	Common GND	Used as ground for both encoder and trigger I/O input.
	Trigger+	Weak pull up to 2.5V.
	Trigger-	Weak pull up to 5V
	Differential voltage of 1V needed. For example an single ended encoder input into PhA+ needs a maximum voltage of 1.5V to signal '0' and a minimum voltage of 3.5V to signal '1'.	

PC Settings

Regardless if you are using a single DSMax frame grabber or dual frame grabbers, Cognex recommends you enable any high-performance settings on your PC. In addition, if your PC supports the following BIOS settings, they should be modified as follows:

- Change "C-States" to "off".
- Change "Speedstep" to "off".
- Change "PCI Performance Mode" to "on".
- Change PCI MMIO Space Size to Large.
- Enable Memory Mapped IO above 4GB.
- On Windows 10, disable **Turn on fast startup** in System Settings on the Windows Control Panel.

Finally, disable any Windows power saving schemes.

Important Product Information

- Under no circumstance should you modify the DSMAX Sensor Head in any way.
- There is no scheduled maintenance necessary to keep the product in compliance.
- When moving the unit from a warm environment to a cold environment, allow the unit to equalize in a room temperature environment for 24 hours.
- Use only Cognex-supplied accessories with the DSMAX Sensor Head. Contact your local Cognexsales representative for more information with any questions about compatible accessories.
- Under the Korean Certification safety standards, this product is certified to “Class A”. EMC registration is done on this equipment for business use only. Product seller and user should take note that this equipment is not for household usage. The following shows a Korean-translated version of this statement:

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Product Service



:Be aware of the following regarding service of a non-operative DSMAX Frame Grabber:

- The DSMAX Frame Grabber cannot be serviced by the customer. Please bring any performance issues to the attention of your Cognex sales representative.
- In case of any necessary servicing or repairing processes, return the unit to the factory.
- Service is only to be handled by authorized factory- trained technicians. The DSMAX Frame Grabber does not contain parts that are user-serviceable
- Under no circumstances should you operate the DSMAX Frame Grabber if it s defective. Cognex Corporation cannot be held responsible for any harm caused by operating a faulty unit

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