

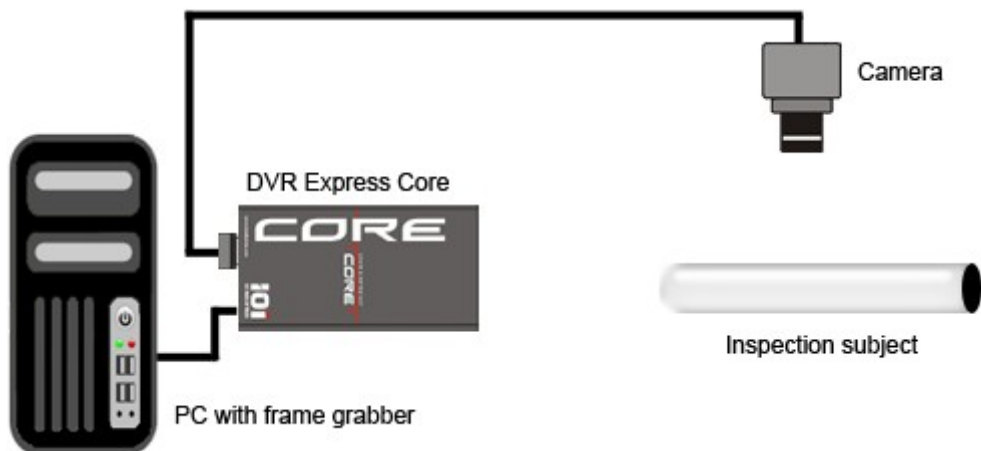
Simultaneous Recording and Processing

“Business is not just doing deals; business is having great products, doing great engineering and providing tremendous service to clients. Finally business is a cobweb of human relationships.”

- H. Ross Perot

I have a keen interest in engineering and I think the best place to design and test new technology is at the university because if you break or blow up something (by mistake) no one will penalize you unless you blew it up on purpose. I have been closely associated with San Jose State University guiding various students in their respective projects. One of the projects that fascinated me was developing a vision system for detecting defects in underground pipes.

After the PG & E gas pipe exploded in 2010, developing an inspection system to detect defects on pipes is critical. Simultaneous processing and recording would be highly beneficial to this inspection system for further analysis and for the purpose of records.



The IO Industries DVR Express Core In/Out is an image recording system. Before I start explaining what exactly is the Core In/Out, let me summarize the salient features of this Core unit:

- 1) Records uncompressed data.
- 2) Uses solid state drives for recording. There are no moving parts making the unit resistant to vibrating and shock.
- 3) Internal maximum storage capacity is 2 terabytes.
- 4) External maximum storage capacity is 16 SSD (8192 terabytes).
- 5) Available in Camera Link, Camera Link In/Out, NTSC, GigE Vision, 3G-SDI, 3G-SDI In/Out modes.
- 6) Available in standalone and semi-standalone modes.
- 7) CoreView basic recording software is included.
- 8) IRIG B time stamping is easy and accurate up to 3 decimal places.
- 9) Multiple Cores can be synchronized for simultaneous recording from multiple cameras.

- 10) Separate download module kit available for faster video data export.
- 11) Video data can be exported in standard formats like TIFF, RAW, JPEG, AVI, etc.
- 12) Time stamp overlay option is available for timed events.
- 13) Triggered recording option is available with pre-trigger benefits.
- 14) Semi-standalone Core recording system uses e-Sata for serial communication and can be controlled using netbook, notebook, toughbook and PC.
- 15) Small form factor, light weight and consumes less than 35W power (without drives).
- 16) Drives can be used in raid 0, raid 1 and raid 3 options.
- 17) Easy field upgradable firmware updates.
- 18) Six TTL signals (In/Out) available.

Ahh and now back to the camera link In/Out Core DVR. The camera link In/Out Core DVR is vital in applications where simultaneous processing and recording is required.

To briefly describe the In/Out Core DVR, the In/Out Core DVR consists of a camera link input and a camera link output. The raw video data from the camera enters the Core DVR and the same video signal is repeated out to the camera link frame grabber. Thereby simultaneously recording and processing.

The recording system is beneficial in the inspection industry, for example in food inspection, bottle inspection, pipe inspection, pill inspection etc.

As the object passes through the conveyor belt, the camera acquires raw video data and the imaging software processes this live image to determine if the object is good or defective. If the object is defective the frame grabber sends a signal (TTL or LVDS) to the DVR Express Core In/Out and the Core DVR starts recording, when the objects begin to pan again, the frame grabber sends another signal and the Core DVR stops recording. Using the pre-trigger tool available, it is possible to obtain previous frame/recordings (just before the failure mode). This recorded video can be useful for further analysis, records or to reduce wastage by carefully analyzing and correcting the reason for failure.

At present the In/Out Core DVR is available in camera link base and SDI configurations only. This unit has been tested with most of the commonly available frame grabbers and processing software.

In addition to the repeat functionality it is also possible to simulate the recordings through the frame grabber and replay the acquired video on the processing software for fine tuning.

Note: The repeat delay is only 80.0ns.

Additional technical details about repeat/simulation can be provided based on request. Please feel free to email or call me.

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