DATAPATH
EXCELLENCE BY DESIGN

ActiveSQX

User Guide

SQX
Streaming Technology
By
DATAPATH
EXCELLENCE BY DESIGN

Version 1.0.1

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Safety Instructions

Safety Instructions (UK)

To prevent damage to your Datapath product or injury to personnel operating the equipment, please read the following safety precautions prior to operation. These instructions should be made available to all those who will use and operate Datapath products.

Power Supply

All Datapath products require a mains power supply. This power supply must be disconnected when equipment is being upgraded or relocated.

Cables

Do not expose cables to any liquids; doing so may cause a short circuit which could damage the equipment. Do not place heavy objects on top of any cables as this can cause damage and possibly lead to exposed live wires.

Ventilation

All computer equipment should be located in a well ventilated area. All ventilation holes on the computer casing must be kept clear of any obstruction at all times. Failure to do so will result in the system over heating and damaging your equipment.

Working Environment

The equipment should be located in an environment free from dust, moisture and extreme changes in temperature and should be placed on a stable and solid work surface. Liquids (hot/cold drinks etc) should not be placed near the equipment as spillage could cause serious damage.

Gas/Flammable Liquids

Electronic equipment should never be used in the presence of gas or any flammable liquid, doing so could result in an explosion or serious fire.

Smoke/Unusual Smells

Should you notice smoke or unusual smells being emitted from your computer, turn off and unplug the system from the mains supply. The system should then be passed to a qualified technician for inspection. Continued operation could result in personal injury and damage to property.

Maintenance

Maintenance should only be carried out by competent technicians, any Datapath plug-in cards that are physically damaged should be returned to Datapath for repair using Datapath RMA procedures.

Disposal

At the end of life all Datapath products should be disposed of as per local laws and regulations dictate. In UK contact Datapath to arrange disposal. Our WEE registration number is WEEE/AA0005ZR.

Consignes de sécurité (Fr)

Afin de ne pas endommager votre produit Datapath et d'éviter tout risque de blessure du personnel exploitant le matériel, veuillez lire les consignes de sécurité suivantes avant toute utilisation. Ces instructions doivent être mises à disposition de toute personne souhaitant utiliser et exploiter les produits Datapath.

Alimentation électrique

Tous les produits Datapath requièrent une alimentation électrique principale. Cette alimentation électrique doit être interrompue en cas de mise à jour ou de relocalisation du matériel.

Câbles

Ne pas exposer les câbles à un liquide quelconque car cela pourrait provoquer un court-circuit susceptible d'endommager le matériel.

Ne pas placer d'objets lourds sur les câbles car cela pourrait causer des dommages et conduire éventuellement à des fils électriques dénudés.

Ventilation

Tout matériel informatique doit être disposé dans un endroit bien ventilé. Veiller à ne jamais obstruer les orifices de ventilation du boîtier de l'ordinateur ; sinon, il y a risque de surchauffe du système et votre matériel peut être endommagé.

Environnement de travail

Le matériel doit être placé sur une surface de travail stable et solide, dans un environnement exempt de poussière et d'humidité et non exposé à des variations extrêmes de températures. Ne pas placer de liquides (boissons chaudes/froides, etc.) près du matériel, car un déversement accidentel pourrait causer de graves dommages.

Gaz/Liquides inflammables

Le matériel électronique ne doit jamais être utilisé en présence de gaz ou de liquide inflammable ; cela pourrait entraîner une explosion ou un grave incendie.

Fumée/odeurs inhabituelles

Si vous constatez la présence de fumée ou d'odeurs inhabituelles émanant de votre ordinateur, éteignez-le et débranchez le système de l'alimentation secteur. Dans ce cas, le système devra être confié à un technicien qualifié pour inspection. Une poursuite de son utilisation risquerait de provoquer des blessures corporelles et des dommages matériels.

Entretien

L'entretien doit impérativement être effectué par des techniciens compétents, toute carte enfichable Datapath physiquement endommagée est à retourner à Datapath pour réparation via la procédure Datapath RMA.

Élimination

En fin de vie, tous les produits Datapath seront éliminés conformément aux législations et réglementations locales. Au Royaume-Uni, veuillez contacter Datapath pour organiser l'élimination. Notre numéro d'enregistrement de Déchets d'équipements électriques et électroniques : WEEE/AA0005ZR.

Instrucciones de seguridad (Esp)

Rogamos leer las siguientes instrucciones de seguridad antes de poner en funcionamiento el equipo, a fin de evitar daños en su producto de Datapath o lesiones al personal encargado de su manejo. Poner estas instrucciones a disposición de todos aquellos que vayan a utilizar y/o manejar los productos de Datapath.

Alimentación eléctrica

Todos los productos de Datapath requieren una fuente de alimentación eléctrica. Esta fuente de alimentación eléctrica debe ser desconectada durante las tareas de renovación o traslado.

Cables

No exponer los cables a líquidos, ya que ello puede causar un cortocircuito y, por consiguiente, daños en el equipo. No colocar objetos pesados sobre los cables, ya que esto puede ocasionar daños y poner al descubierto los cables vivos.

Ventilación

Todos los equipos informáticos deben estar situados en un área bien ventilada. Mantener todos los orificios de ventilación de la carcasa del ordenador siempre libres de obstrucciones de cualquier tipo. En caso contrario, podría producirse un sobrecalentamiento del sistema y daños en el equipo.

Entorno de trabajo

El equipo debe estar emplazado en un ambiente sin polvo, humedad ni cambios bruscos de temperatura y debe ser situado sobre una superficie estable y sólida. No colocar líquidos (bebidas calientes/frías, etc.) cerca del equipo, ya que un derrame podría causar graves daños.

Gas/líquidos inflamables

El equipo electrónico nunca debe ser usado en presencia de gas o líquido inflamable, ya que esto podría causar una explosión o un incendio grave.

Humo/olores inusuales

En caso de percibir humo u olores inusuales provenientes de su ordenador, apagar y desenchufar el equipo de la red eléctrica. El sistema debe ser confiado entonces a un técnico cualificado para su

inspección. Si el equipo continuara funcionando, esto podría ocasionar lesiones personales y daños materiales.

Mantenimiento

El mantenimiento solo debe ser ejecutado por técnicos capacitados. Las tarjetas insertables (plug-in) de Datapath que estén físicamente dañadas deben ser devueltas a Datapath para su reparación según los procedimientos RMA (Return Merchandise Agreement) de Datapath.

Eliminación

Al final de su vida útil, todos los productos de Datapath deben ser eliminados de acuerdo con las leyes y normativas locales. En el Reino Unido, contactar a Datapath para organizar la eliminación. Nuestro número de registro WEE (Waste Electrical and Electronic Equipment) es WEEE/AA0005ZR.

Sicherheitsanweisungen (D)

Die folgenden Sicherheitsanweisungen dienen der Vermeidung von Schäden an Ihrem Datapath-Produkt und Verletzungen der Nutzer. Bitte lesen Sie sie sorgfältig durch, bevor Sie Ihr Produkt in Betrieb nehmen. Diese Anweisungen sollten allen Personen zugänglich gemacht werden, die mit der Nutzung und der Bedienung von Datapath-Produkten betraut sind.

Stromversorgung

Alle Datapath-Produkte müssen an die Hauptstromversorgung angeschlossen werden. Die Stromversorgung muss unterbrochen werden, wenn Geräte ausgetauscht oder an einer anderen Stelle platziert werden sollen.

Kabel

Kabel dürfen nicht mit Flüssigkeiten in Berührung kommen, da dadurch ein Kurzschluss und somit ein Schaden an dem Gerät ausgelöst werden könnte. Stellen Sie außerdem keine schweren Objekte auf die Kabel, um Schäden und offen liegende stromführende Leitungen zu vermeiden.

Lüftung

Computerausrüstung sollte in einem gut gelüfteten Bereich aufgestellt werden. Die Lüftungslöcher am Computergehäuse müssen stets freigehalten werden, um eine Überhitzung und somit einen Geräteschaden zu vermeiden.

Arbeitsumgebung

Die Geräte sollten in einer staubfreien und trockenen Umgebung, in der keine extremen Temperaturänderungen zu erwarten sind, auf einer stabilen Arbeitsfläche aufgestellt werden. In der Nähe der Geräte sollten keine Flüssigkeiten (heiße/kalte Getränke etc.) platziert werden, die verschüttet werden und schwerwiegende Schäden anrichten könnten.

Gas/brennbare Flüssigkeiten

Elektronische Geräte sind nicht in Umgebungen zu verwenden, in denen Gas oder brennbare Flüssigkeiten vorhanden ist/sind und somit Brand- und Explosionsgefahr besteht.

Rauch/ungewöhnliche Gerüche

Schalten Sie das System aus und trennen Sie es von der Hauptversorgung, wenn von Ihrem Computer Rauch ausgeht oder dieser ungewöhnliche Gerüche abgibt. Lassen Sie das System anschließend von einem qualifizierten Techniker prüfen. Bei fortgeführtem Betrieb besteht die Gefahr von Verletzungen und Sachschäden.

Wartung

Wartungsarbeiten sollten nur von qualifizierten Technikern durchgeführt werden. Physisch beschädigte Plug-in-Karten von Datapath sollten zur Reparatur unter Einsatz der RMA-Verfahren von Datapath an Datapath übergeben werden.

Entsorgung

Am Ende ihrer Nutzungsdauer sollten Datapath-Produkte gemäß den lokalen Gesetzen und Bestimmungen entsorgt werden. Für Nutzer in Großbritannien: Bitte kontaktieren Sie Datapath, um Vorkehrungen zur Entsorgung von Datapath-Produkten zu treffen. Unsere WEE-Registrierungsnummer lautet WEEE/AA0005ZR.

Introduction

Professional AV solutions require video to be received from a great many different sources and locations. The ability to receive and display video directly from online resources such as CCTV networks and remote desktop applications and combining them with local inputs has become an everyday part of a fully functional video wall display. Datapath's ActiveSQX PCIe plug in card is a powerful addition to systems that require a hardware based decoding solution.

The ActiveSQX includes a dedicated processor capable of decoding several IP streams simultaneously via the on-board Ethernet ports. Fully PCIe compatible, multiple ActiveSQX cards can be used in a single system to provide project scalability giving users more processing and more simultaneous decodes.

Unpacking

Note:

All plug-in cards are static sensitive and are packed in anti-static material. Please keep the card in its packaging until you are ready to install.

It is recommended that you do not discard the packing box until you are completely satisfied with the ActiveSQX capture card and it is fully installed and working correctly. We also recommend that you make a note of the serial number of the card in a prominent place before the card is plugged into the computer. This should hasten any query should you need to contact our Technical Support Department. The serial number is displayed on the card itself and the box label.

Hardware Overview

The ActiveSQX is a half length PCI-Express plug in card with two Gigabit Ethernet input nodes supporting real time decode of multiple IP streams. Using the ActiveSQX decoding technology provides the user seamless integration of IP video to a Datapath Wall Controller.

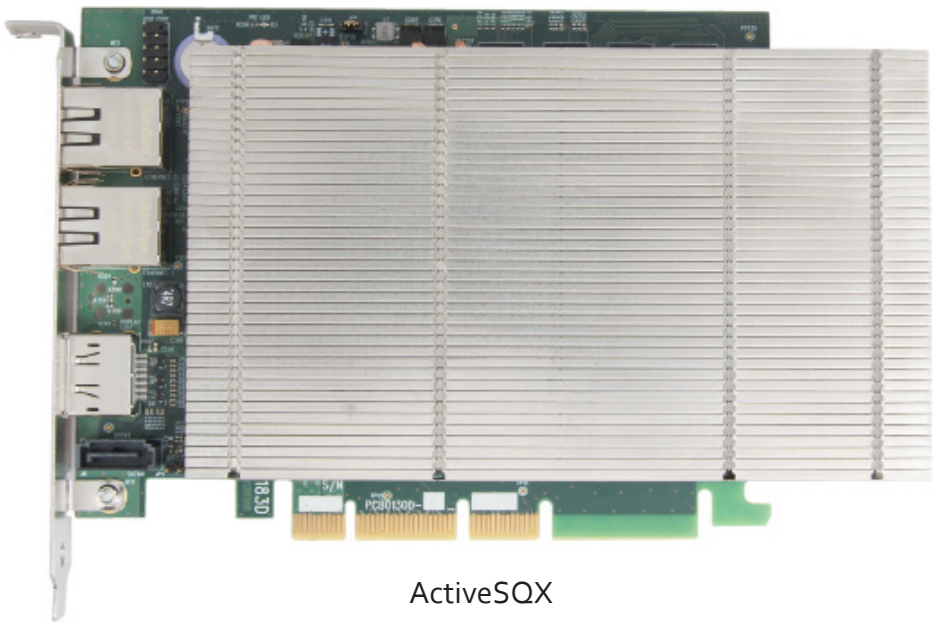
Each ActiveSQX card can capture a bandwidth equivalent to twelve 1920x1080 @30Hz streams on to any wall controller that uses Datapath graphics cards. The number of streams the ActiveSQX provides depends on a number of factors such as the decoder profile used.

Each card uses a single PCIe slot, is passively cooled and can easily be added to a system already using Datapath technology without the need to change existing configuration or front end software.
This transparent software model enables the number of supported IP streams to be scaled up quickly according to the user requirements. ActiveSQX also automatically balances the total decoding workload across all ActiveSQX cards in the system, allowing thermal power consumption to be distributed more efficiently.

SQX technology has been designed to work alongside the Datapath Vision range of capture cards supporting a mixture of local and remote capture feeds on the same display. IP Streams are displayed on the video wall in the same way as captured video sources. SQX functionality is compatible with many existing Vision window features.

Models

ActiveSQX



ActiveSQX
Dedicated Decoding PCIe Card

Installing ActiveSQX Cards

You are likely to need a flat blade and/or a cross head screwdriver for the installation of the ActiveSQX card; it would be useful to have these to hand before you begin.

- Power down the PC (including peripherals), switch off at the mains and disconnect all the cables connected to the computer, noting the positions for accurate re-connection
- Remove the PC cover
- Locate a vacant PCI Express slot (x4 or higher) on the motherboard and remove the blanking plate (retain all screws)

If you are in doubt consult your motherboard documentation to correctly identify a PCI Express slot. If the card is forced into a 32 or 64 bit PCI or PCI-X slot it will be irreparably damaged when the system is powered up and the warranty will be void.

- Reconnect all cables to the PC then connect Network cables (not supplied) to the Ethernet port on the ActiveSQX capture card
- Power up the PC and commence the software installation

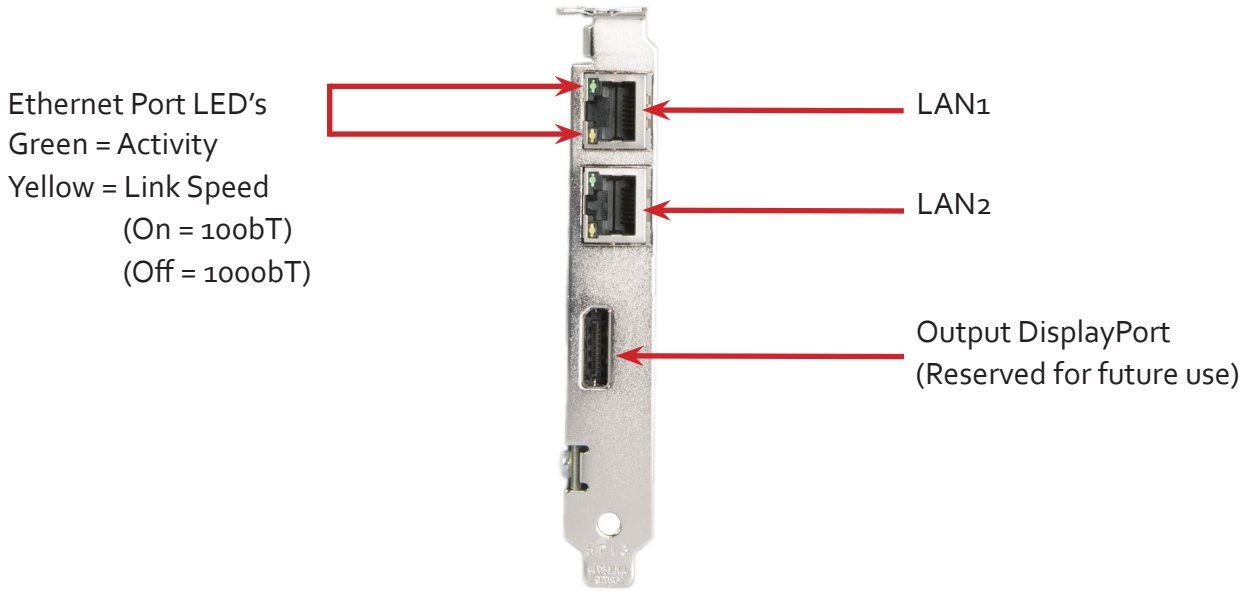
Multiple ActiveSQX cards can be installed into a system providing more processing and more simultaneous decodes.

Note:

The ActiveSQX card is only compatible with systems containing Datapath ImageDP4 graphics cards.

How to Connect Input Sources

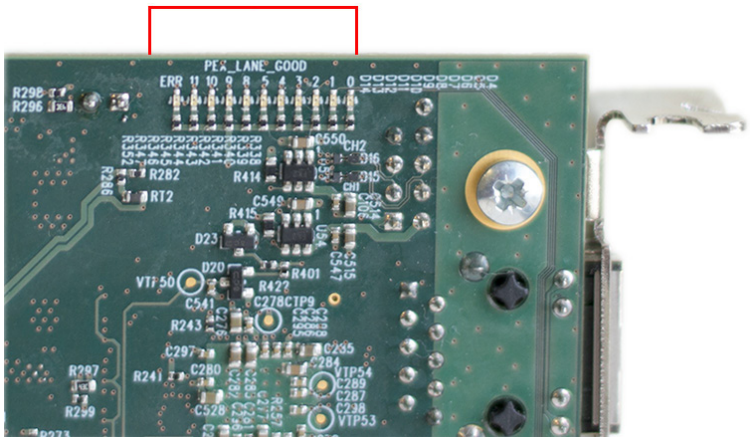
The ActiveSQX card has two Ethernet ports and one currently dormant output DisplayPort connector (reserved for future use).



Connect a network cable into one or both of the Ethernet ports. Care should be taken when connecting a network cable, ensure the cable connector is pushed firmly into the Ethernet port until you hear a definite click. Failure to connect the network cable properly could result in the network connection being lost.

Link LEDs

On the rear of the ActiveSQX are a series of LED's labelled *PEX_LANE_GOOD.*



The green LED's are labelled 0-5 and 8-11 these map to LED's D4 to D13. The LED's indicate the following:

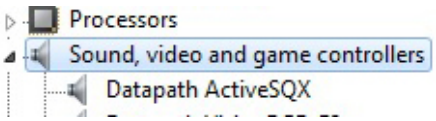
LED	Link Lane	LED Status			Normal Operation
0:	PCI Host Link lane 0	On=Gen 2	Flashing=Gen 1	Off=Link not trained	On - Gen 2
1:	PCI Host Link lane 1	On=Gen 2	Flashing=Gen 1	Off=Link not trained	On - Gen 2
2:	PCI Host Link lane 2	On=Gen 2	Flashing=Gen 1	Off=Link not trained	On - Gen 2
3:	PCI Host Link lane 3	On=Gen 2	Flashing=Gen 1	Off=Link not trained	On - Gen 2
4:	LAN 1 Link lane 0				Flashing - Gen 1
5:	LAN 2 Link lane 0				Flashing - Gen 1
8	ATOM Link lane 0				On - Gen 2
9	ATOM Link lane 1				On - Gen 2
10	ATOM Link lane 2				On - Gen 2
11	ATOM Link lane 3				On - Gen 2

IP Addressing

Out of the box, the ActiveSQX card is configured to accept Dynamic IP addressing. Depending on the topology of your network this may need to be changed to a Static IP address.

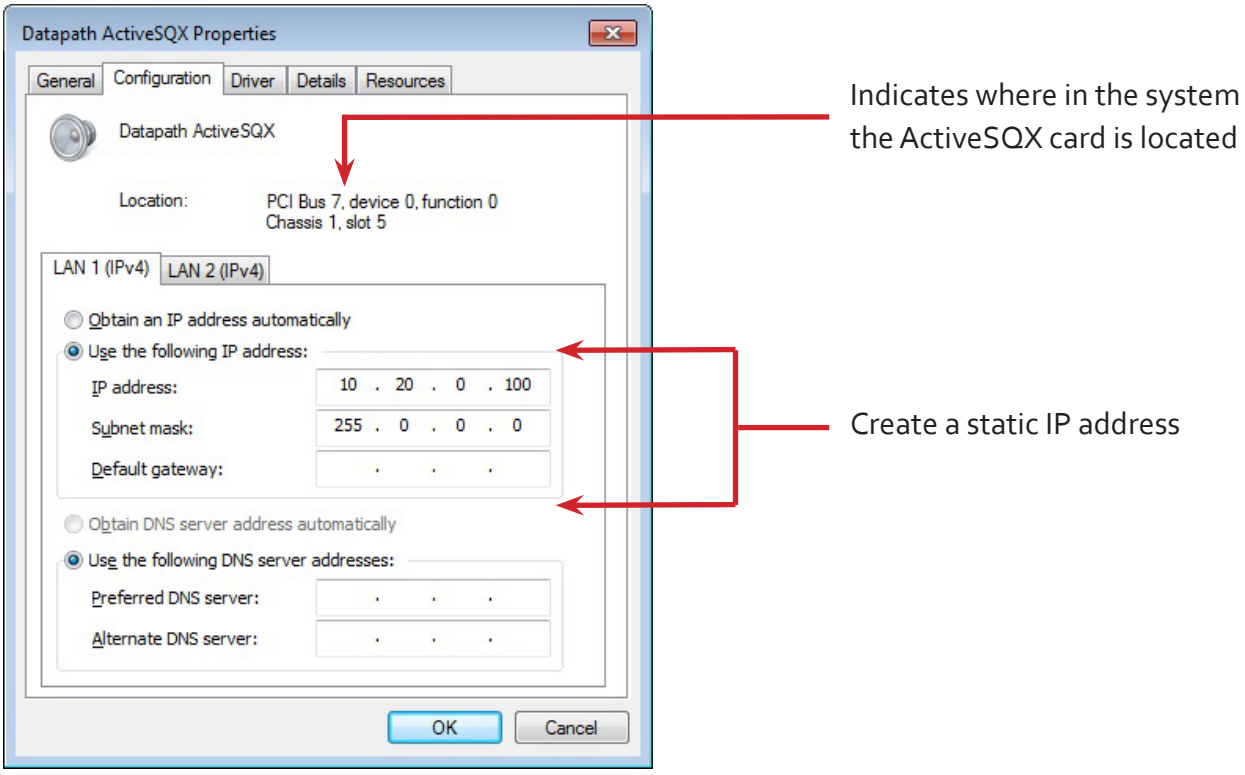
To reconfigure the IP addressing open the Device manager by selecting **System and Security** in the system **Control Panel**. From the **System** menu select **Device manager**.

In the Device Manager expand Sound, video and game controllers and the ActiveSQX card(s) is displayed.



Right click on the Datapath ActiveSQX then select properties from the displayed menu. Click on the **Configuration** tab and the Configuration dialogue is displayed.

To configure a static IP address select **Use the following IP address**. The IP address box will be populated automatically with an IP address allocated by the network. You can either keep this IP address as your static address or create one of your own.



LAN1 and LAN2 operate independently therefore, should both require configuring as a Static IP address then this process should be repeated for LAN2 by clicking on the LAN2 tab.

Software Overview

The ActiveSQX requires little configuration to be up and running, the your software should detect the card and allow you to add IP camera windows to your display wall. The card opens a gateway to the network enabling the user to add, configure and modify IP cameras using the Datapath SQX software.

The application displays the connected source in a window on your desktop; it has the following features:

- Scales the data to fit in the window
- Ability to set up sources accurately (settings automatically saved)
- Command line interface

Alternatively use the SQXEasy SDK.

Note:

The supplied drivers and software require that you are using:

- **Windows® 7 64 bit / Server 2012**
- **CD / DVD ROM Drive**

Software Installation

The Datapath SQX software (driver and application) is installed by inserting the CD that was shipped with your card into your DVD drive. The installation process should start automatically.

Should the DVD fail to autorun use **Explorer** to browse the CD, locate then double click on **install.exe** file e.g. **d:/install.exe** and click on **Install Software…** and follow the installation wizard instructions as prompted.

Regular software updates are available from our website: www.datapath.co.uk

Firmware Upgrades

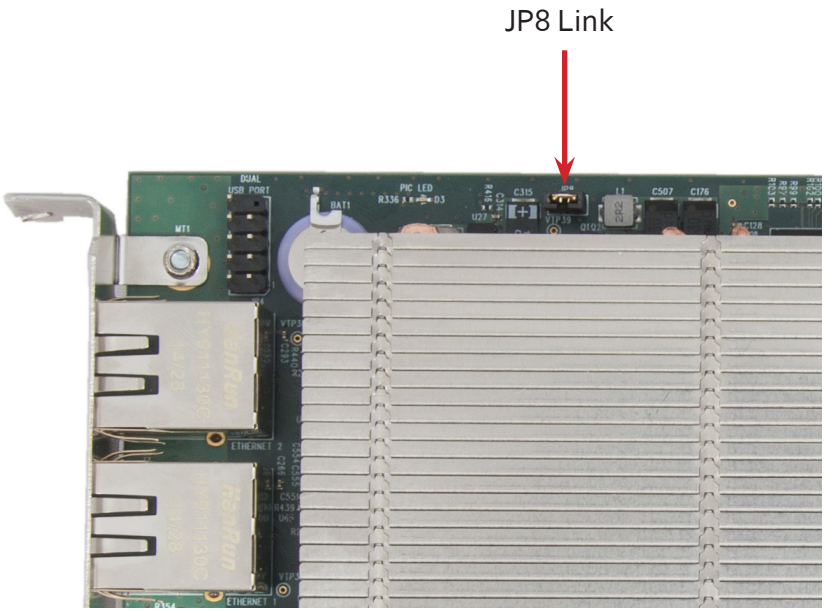
The ActiveSQX cards allow firmware upgrades to be completed on site rather than returning the card to Datapath. Whenever a firmware upgrade is performed, the **JP8** Link **MUST BE FITTED** on the ActiveSQX card.

To perform the upgrade, follow the step-by-step instructions provided by the upgrade application.

In the unlikely event that something goes wrong during the upgrade process (e.g. System power outage) it is possible to revert to the factory settings by powering down the system, temporarily removing the **JP8** link then powering up the system with the link removed.

Once the system has rebooted, replace the **JP8** link (whilst the system is powered up) and restart the firmware upgrade process.

It should be noted that the latest driver installation program includes an automatic firmware update, if required. Therefore, prior to installing the application and driver, ensure that J8 link is fitted.



Also available on the Datapath CD:

- The Release Notes - The release notes contain the latest information on the ActiveSQX
- Installation instructions.
- Release history
- Known problems
- Troubleshooting

Using the card with other Datapath products

Datapath's SQX technology is compatible with industry standards for video compression and streaming. The ActiveSQX card can be used in Datapath wall controller systems along side the Vision range of capture cards. Combined with the VisionHD2-SQX it provides a full decode and encode capability in a single system.

The ActiveSQX is totally integrated within the Datapath Wall Control-SQX software enabling IP streams to be configured and displayed anywhere on the display wall with display window functionality such as Carousel that allows you to create a display list of IP streams which can be cycled through and displayed for a specific duration.

Specification

Board Format	PCI Express x4 (electrically) half length, full height, Gen.2 PCIe card. The card can physically be plugged into a X4, X8 or X16 slot.
Connectors (main board)	2 x RJ45 Ethernet ports, 1 x DisplayPort output connector (reserved for future use)
Ethernet	Dual 1000 Base-T Ethernet ports DHCP or static IP support IPv4
Streaming Protocols	HTTP, RTSP & MPEG2-TS support Multicast& Unicast support
Codec Support	• For the most up to date list of Codec support, download the latest ActiveSQX product datasheet.
H.264 Decode	• Upto 3 x 4096x2160p @30fps or • 6 x 1920x1080p @ 60fps / 12 @ 30fps • 50+ D1 @30fps
De-interlacing	Supported
Scaling	Hardware downscaling prior to DMA transfer. 1 : 1 transfer for upscale after DMA
Video Capture Memory	4GB
H.264 Profiles	Constrained Baseline Profile (CBP) / Main Profile (MP) / High Profile (HiP)
H.264 Levels	Level 3 / 3.1 / 4 /4.1 / 4.2 /5 / 5.1/5.2
Colour Format	NV12 4:2:0 Support.
DMA Engine	Direct DMA to physical or virtual memory buffers with full scatter-gather support. DMA bandwidth : up to 1.3GB/s.
Carousel	IP Window Carousel supported including the hardware based pre-buffering of IP decodes for smoother playback
Operating System Support	Windows 7 64 bit / Server 2012
Power Requirements	Max current at +3.3V = 1.9A Max current at + 12V = 1.9A Average power = 14W
Operating Temperature	0 to 35 °C (32 to 95°F)
Storage Temperature	-20 to 70 °C (-4 to 158°F)
Relative Humidity	5% to 90% non-condensing
Warranty	3 years

We are continuously developing the technology used within our product ranges delivering outstanding innovative solutions, therefore the specifications may change from time to time.

Datapath Limited

Datapath has a long and very successful history in the computer graphics industry. Datapath has been designing and supplying high performance, high quality graphics display systems to the world's largest and most demanding companies and institutions since 1982. Datapath was one of the founding companies of multi-screen Windows acceleration using single and multi board solutions. Now using the very latest display technology Datapath offers some of the world's leading multi screen graphics accelerators for the most demanding applications.

As new technology advances, so we at Datapath improve the performance and functionality of both our hardware and software to give our customers more. Following a continuous development program, we pride ourselves on our support and responsive nature towards all our customers and their changing needs. As more sophisticated equipment and techniques become readily available, so we are there to exploit the power and potential that this technology presents.

Technical Support

Registered users can access our technical support line using email, and the Support page on the Datapath Web Site, usually with a response within 24 hours (excluding weekends).

Via Email

Send an email to support@datapath.co.uk with as much information about your system as possible. To enable a swift response we need to know the following details:

- Specification of the PC - including processor speed
- Operating System
- Application Software
- Datapath Hardware / Software
- The exact nature of the problem - and please be as specific as possible.

Please quote version and revision numbers of hardware and software in use wherever possible.

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