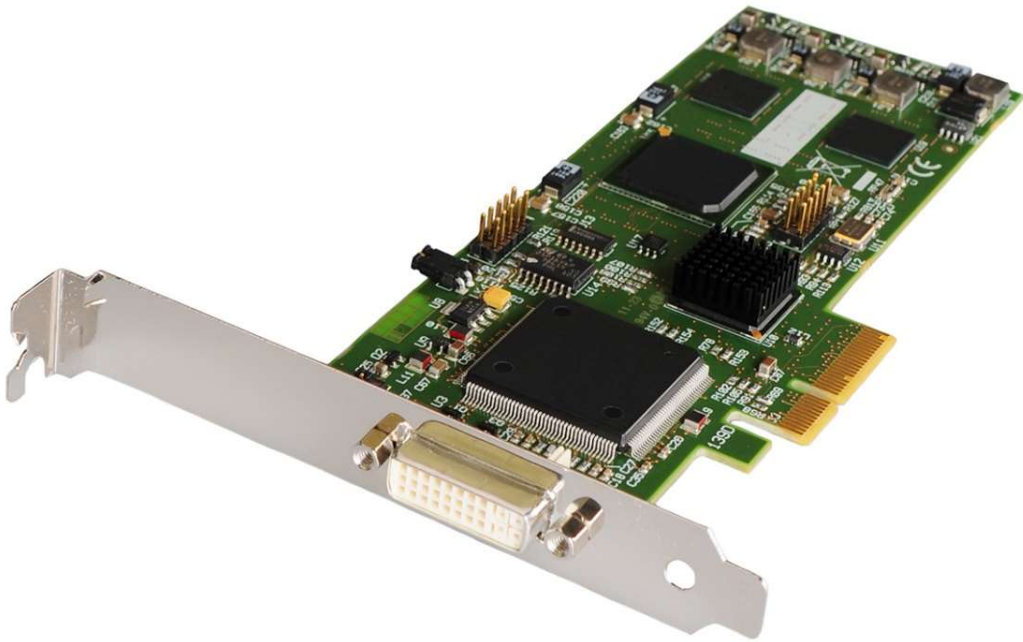# XtremeRGB-Ex1+

Single channel video capture card

UserGuide
Version 01.02.1

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EMS
Imaging
Advanced Imaging Technology

Chapter 1

Safety Instructions

Safety Instructions (UK) 🇬🇧

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

Power Supply

All EMS 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 EMS plug-in cards that are physically damaged should be returned to EMS for repair using EMS RMA procedures.

Disposal

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

Consignes de sécurité (Fr) 🇫🇷

Afin de ne pas endommager votre produit EMS 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 EMS.

Alimentation électrique

Tous les produits EMS 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 suscep- tible d'endommager le matériel.

Ne pas placer d'objets lourds sur les câbles car cela pourrait causer des dommages et conduire éven- tuellement 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 EMS physiquement endommagée est à retourner à EMS pour réparation via la procédure EMS RMA.

Élimination

En fin de vie, tous les produits EMS seront éliminés conformément aux législations et réglemen- tations locales. Au Royaume-Uni, veuillez contacter EMS 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 EMS 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 EMS.

Alimentación eléctrica

Todos los productos de EMS 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 tempera- tura 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 EMS que estén físicamente dañadas deben ser devueltas a EMS para su reparación SEGÚN los procedimientos RMA (Return Merchandise Agreement) de EMS.

Eliminación

Al final de su vida ÚTIL, todos los productos de EMS deben ser eliminados de acuerdo con las leyes y normativas locales. En el Reino Unido, contactar a EMS 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 EMS- 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 EMS-Produkten betraut sind.

Stromversorgung

Alle EMS-Produkte MÜSSEN an die Hauptstromversorgung angeschlossen werden. Die Stromver- sorgung 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 Tempera- turänderungen 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 FLÜS- sigkeiten 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 be- schädigte Plug-in-Karten von EMS sollten zur Reparatur unter Einsatz der RMA-Verfahren von EMS an EMS ÜBERGEBEN werden.

Entsorgung

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

Introduction - XtremeRGB-Ex1+

The XTREME-RGB-EX1+ a single channel PCIe capture card can capture:

- Component HD up to 1080P at 60 frames per second HDMI up to 1080P DVI up to 1920 x 1200 (*Audio not supported, HDCP not supported*)

- RGB/VGA up to 2048 x 1536

The data is stored in a 32MB frame buffer on the card in real time. The data is transferred using PCI bus master DMA with scatter gather.

The data can be transferred to system memory or to off-screen memory on a EMS graphics card

Models

XTREMERGB-EX1+ - A single channel PCIe x4 low profile capture card - Data transfer rate

650MB/s.

Specification - XTREMERGB-EX1+

Board Format	PCIe x4 low profile card, 68.mm x 167.6mm PCIe bus master with scatter gather DMA providing maximum data rate of 480MB/s for the XTREME-RGB-EX1 and 650MB/s for the XTREMERGB-EX1+
Connectors	One DVI-I Type connector
Maximum Sample Rate	170 Mpixels per second analog RGB or 165MHz DVI
Video Sampling	Analog RGB: 24 bits per pixel / 8-8-8 format
Video Capture Memory	32MB per channel (updated in real time). Triple buffered
Analog RGB Mode Support	640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200, 1920 x 1080, 2048 x 1536, Custom modes
DVI Single Link Mode Support	640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200, 1920 x 1080, 1920 x 1200 and Custom modes
HD Modes	1080P, 1080I, 720p, 567p, 480p and 480i using a Component HD connector (HDCP not supported)
Input Mode Detection	Automatic detection of input modes in hardware enabling the tracking of mode changes in the source signal
Pixel Transfer Formats	RGB: 5-5-5, 5-6-5 or 8-8-8 pixels YUV 4:2:2 modes: UYVY, YUY2 or YVYU MONO: 8bit
Update Rate	User defined, captured frame rate will match the source providing max data rate (480MB/s -XTREME-RGB-EX1, 650MB/s -XTREME-RGBEX1) is not exceeded. Triple buffered to eliminate tearing artifacts
Video Format Options:	Analog RGB plus HSync and VSync (5 wire) Analog RGB with Composite Sync (4 wire) Analog RGB with Sync on Green (3 wire) DVI Single Link
Operating System Support	Windows® XP, Windows® Vista, Windows® Server 2003, Windows® Server 2008 and Windows® 7 (x86 and x64 Operating Systems)
Power Requirements	Max current at +3.3V – 0.25A Max current at +12V – 0.5A Max power – 6.8 Watts
Operating Temperature	0 to 35 deg C / 32 to 96 deg F
Storage Temperature	-20 to 70 deg C / -4 to 158 deg F
Relative Humidity	5% to 90% non-condensing
Analog Input Range	Min 0.5Vpp Max 1.0VPP
Input Offset:	+/-2V
Hsync	15KHZ - 110KHZ
Vsync	No hardware limits, typically 25Hz - 200Hz for real signals
Separate Sync Polarity	Positive or Negative. (Separate H & V sync, Composite Sync)
Sync On Green Polarity	Negative
Inputs	75 Ohm terminated
Warranty	3 years

Unpacking

Your packing box contains the following items:

- XTREMERGB-EX1+ data capture card.

- 1 x DVI/VGA, 1 x DVI/Component and 1 x DVI/HDMI Adapter

- 1 x low profile card bracket

If there are any discrepancies, you should contact EMS immediately.

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 XTREME-RGB-EX1+ 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.

Installing the Capture Card

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

Installing the card is a simple process, follow the steps below to be up and running in a few minutes:

• 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 reconnection. Remove the PC cover

• Locate a vacant PCIe (x4 or above) slot for the XTREME-RGB-EX1+ on the motherboard and remove the backing plate (retain all screws). If in doubt consult your motherboard documentation to cor-rectly identify a PCIe (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.

• Remove the card from its packaging and secure it firmly into the empty PCIe slot. Extreme care should be taken when securing the card into the slot as some motherboards may have components that impede the siting of the card

• Screw the card bracket to the back panel of the PC and replace the cover

• Re-connect all cables to the PC

• Connect the cable(s) distributing the RGB/DVI/HD signals to the connectors on the XTREME-RGB-EX1+ card located on the back panel.

• Power up the PC and commence the software installation.

Connections

The XTREME-RGB-EX1+ has one DVI-I type connector.

The card is connected using:

• DVI-D Cable

• DVI-A Cable

• Analog VGA (RGB) cable (adapter supplied)

• HDMI cable (adapter supplied)

• Component HD cable (adapter supplied)

Connect one end of the cable to the source. Connect the other end of the cable to DVI-I type connector located on the XTREME-RGB-EX1+ card in your computer

Installing Multiple Cards

Multiple cards can be installed in a system providing a large number of capture channels. Combinations of Xtreme capture cards in the same machine are supported by the driver.

To control the order in which the driver uses the cards, it is recommended when installing multiple cards that the J5 links on the XTREME-RGB-EX1+ are configured. The illustration below shows the jumper link settings for up to 32 cards in a single system. When two cards have the same link settings, their order is determined by the PCI bus:

■ Indicates link fitted

▐ Indicates Link not fitted
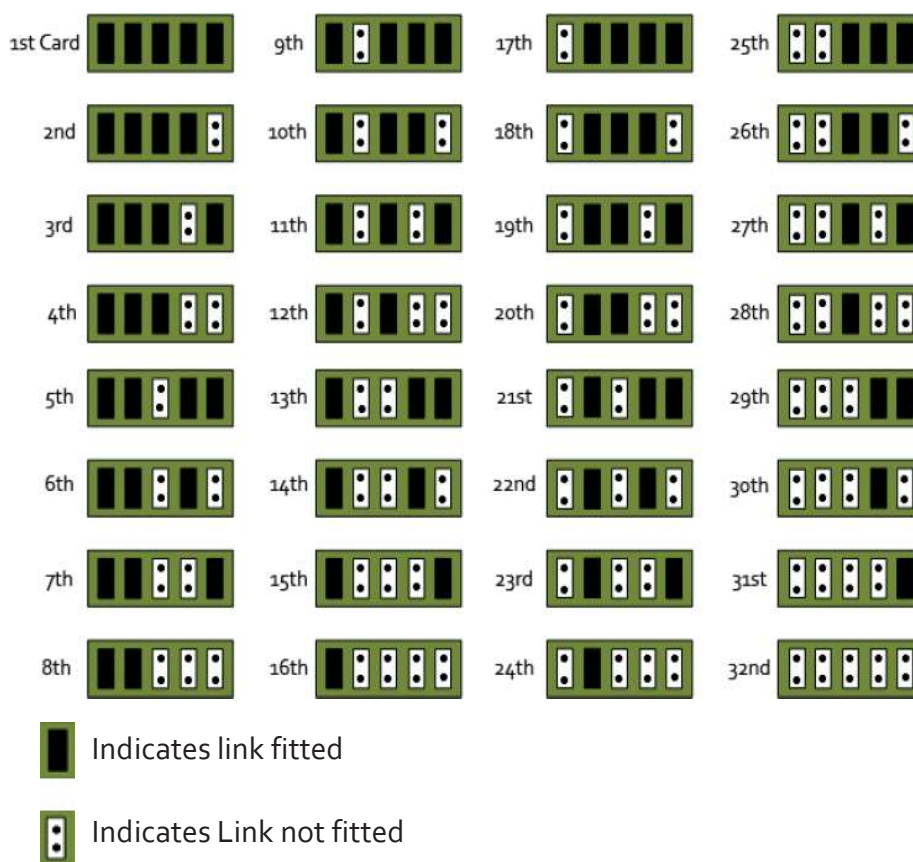
DirectShow

If you change the link ordering after installation you must run dplinks.exe. This program will update the existing input names used by the Windows ®DirectShow interface.

To run the dplinks program open the Run by clicking on Start/Run and type dplinks and then press Enter.

The program will run, however no notifications are displayed.

Firmware Upgrades

The XTREME-RGB-EX1+ cards allow firmware upgrades to be completed on site rather than returning the card to EMS. Whenever a firmware upgrade is performed, **LK4 MUST BE FITTED on the Xtreme-RGB-EX1+**. 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 LK4 then powering up the system with the link removed. Once the system has rebooted, replace the LK4 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 LK4 is fitted.

Extended Display Identification Data (EDID) - Disable Links

EDID is data provided by a display monitor and sent to the graphics device detailing the monitor's capabilities thereby enabling a system to identify the type of monitor that is attached.

The graphics device installed on your machine will see the card as a monitor and will expect to receive the EDID data from the card.

However, in rare circumstances it may be necessary that the XTREMERGB-EX1+ does not report an EDID of any kind. In this instance EDID support can be disabled by removing link LK3 on the XTREMERGB-EX1+.

Software Installation

The Xtreme software (driver and application) is installed from www.ems-imaging.com/downloads

The installation process should start automatically.

Follow the installation wizard instructions as prompted.

Regular software updates are available from our website:

www.ems-imaging.com/downloads

Application Overview

The application displays the input source in a window; it has the following features:

- Scales the data to fit in the window

- Ability to set up sources accurately (settings automatically saved)

- Save a single frame to a file in one of the following formats:
  BMP, JPEG, GIF, TIFF, PNG

- Print a single frame

- Record and playback captured data using DirectShow

- Maintain the aspect ratio of the displayed data

- Cropping

- Display text over the data (on-screen display)

- Command line interface

- Help file documenting all features

Note:

The supplied drivers and software require that you are using:

- **Windows® XP, Windows® Vista, Windows® Server 2003, Windows® Server 2008 or Windows® 7 (x86 and x64 Operating Systems)**

- **CD / DVD ROM Drive**

Using the card with other EMS products

The XTREMERGB-EX1+ captures the data and stores it in an on-board video buffer. This data is then copied using DMA to the host system for display, storage or streaming.

When a EMS graphics card is used, the XTREMERGB-EX1+ transfers the data directly to the graphics card thereby increasing performance. The XTREMERGB-EX1+ sends the relevant portions of each captured image to each display channel and instructs each channel to use its graphics engine to render the data. This fully utilizes the hardware and dramatically increases performance.

When a Direct3D compatible graphics card is used the data can be transferred direct to the graphics card in a similar manner to the EMS graphics card with the added benefit of non-tearing captures.

When the data is displayed on a non EMS graphics card, the XTREMERGB-EX1+ sends the data to system memory or direct to the graphics card, dependant on the software used for display.