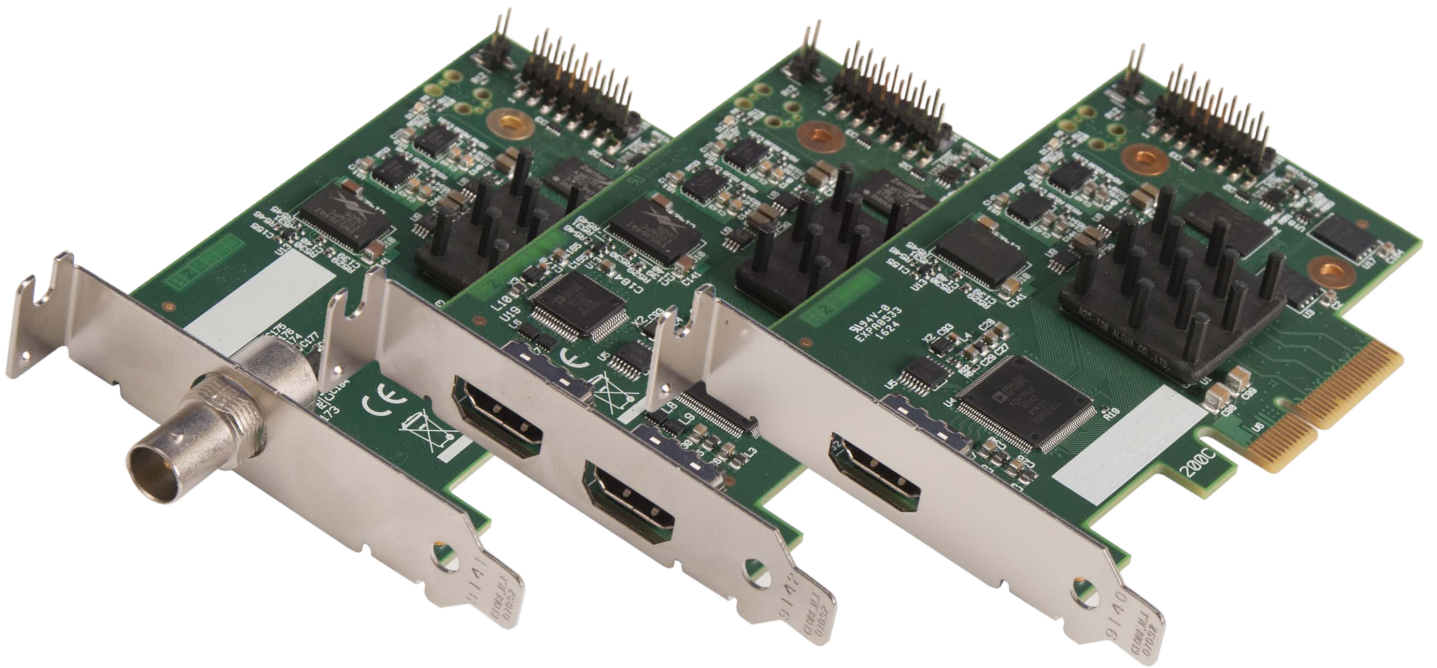


The XtremeLC Range

Dual and Single Channel Live Capture Cards

User Guide

Version 1.0.0



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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 available 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 dictate. 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 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 un 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 réglementations 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 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 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 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

Computerausstattung 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 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-Registrierungsnummer lautet WEEE/AA0005ZR.

+ Introduction

The XtremeLC range of "Live Capture" cards provide single and dual channel high definition capture channels in a PCIe low profile card. The full range of LC capture cards include:

XtremeLC-HD - Single channel, high definition HDMI live capture card

XtremeLC-HD2 - Dual channel, high definition HDMI live capture card

XtremeLC-SDI - Single channel, SDI live capture card

EMS's LiveStream Capture architecture allows captured video to be processed and delivered in real time to a processor or graphics card. The XtremeLC range of cards support on board colour space conversion and scaling, providing the ability to efficiently transfer the video signal in a suitable format for rendering or encoding applications. The XtremeLC range natively supports 32, 24, 16 and 12 bit YUV and RGB formats.

The XtremeLC range has been designed specifically for use within smaller applications:

- Medical operating theatres
- Simulation systems
- Lecture capture
- Real time Streaming
- Videoconferencing

+ Installing the Capture Card

You are likely to need a flat blade and /or a cross head screwdriver for the installation of your XtremeLC 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 physical 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.

- Reconnect all cables to the PC then connect HDMI or SDI cables (not supplied) distributing the signal to the connections on your XtremeLC card
- Power up the PC and commence the software installation.

Connecting Input Sources

Never use force when connecting cables to your XtremeLC card as it could cause damage to the connector on the card and in turn, damage the card itself which is not covered under warranty.

Hardware Overview

XtremeLC-HD

- Single HDMI capture channel
- Up to 297 Mp/s pixel clock capturing up to 3840x2160 @30Hz
- 800 MB/s DMA bandwidth
- PCIe Gen 1 x4 low profile card

XtremeLC-HD2

Capture channel 1 - Bottom Connector

- HDMI capture channel
- 3840x2160p @30Hz (UHD)

Capture channel 2 - Top Connector

- HDMI capture channel
- 1920x1080p @ 60Hz (HD)
- 1.6 GB/s total DMA bandwidth
- PCI Express Gen 2 x4 low profile

XtremeLC-SDI

- Single SDI capture channel
- SD-HD-3G at 60 Hz
- 800 MB/s DMA bandwidth
- PCI Express Gen 1 x4 low profile

Combined features

- High performance up and down scaling
- Colour space conversion to supported output formats
- EMS unified Windows® and Linux® driver support

+ Software Overview

Software Install

Software for your XtremeLC card can be installed from the XtremeLC CD supplied with your capture card:

Insert the CD into your CD drive, the CD will autorun and display the install dialogue. If the CD fails to autorun, browse the CD and double click the setup.exe file. Select **Install Software...** and follow the installation wizard instructions when prompted.

Regular software updates are available, check the downloads page on the EMS website for details.

Also available on the EMS CD:

- The Release Notes - The release notes contain the latest information on the XtremeLC range of capture cards.
- Installation instructions.
- Release history
- Known problems
- Troubleshooting
- The application Help File - The help file must be stored located on the local machine to view its content.

The XtremeLC software provided with the capture card allows HDMI or SDI inputs to be captured for either display or encoding.

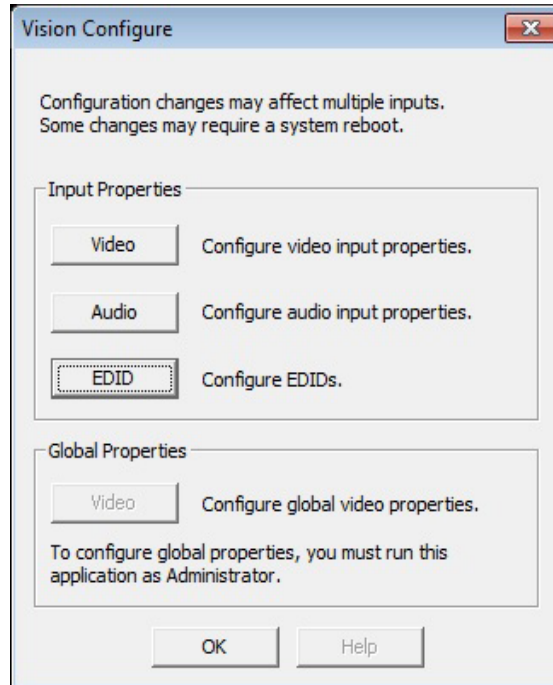
The DirectShow®, Media Foundation or Video for Linux interfaces can be used in conjunction with the cards to stream video across a network or to disk. A graphical DirectShow® application interface under the Windows® platform can be used to configure properties of the card.

The supplied drivers and software require that you are using:

- A Pentium PCI bus computer.
- Linux, Windows® XP Professional, Windows® Server 2003, Windows® Server 2008, Windows® Vista, Windows® 7, Windows® 8 and Windows® 10
- CD ROM Drive.

Xtreme Configure Dialogue

To configure the XtremeLC properties under the Windows® platform, open Start\Xtreme\XtremeLC Configure and the following dialogue is displayed:



The Xtreme Configure dialogue allows you to configure the input properties for Video, Audio and offers the ability to configure EDIDs.

Video Input Properties:

- Filter Properties
- Filter Colour Properties
- Filter Configure
- Filter Information

Audio Input Properties:

- Audio Format
- Analogue Audio
- Output Mixer
- Line Out

Configure EDIDs:

- Create an EDID
- Reset an EDID
- Import an EDID

- Export an EDID

The Global Video properties can only be accessed if the application is run as Administrator.

Click on the Help button for more information regarding the Xtreme Configure dialogue.

Video Streaming

Built upon the Microsoft AV Stream framework, the XtremeLC range of live capture cards can be accessed and enumerated by any DirectShow or Media Foundation supported application. A Video for Linux (V4L) driver package is also available for down-load.

Tested applications include:

- Microsoft Media Encoder
- VLC
- Telestream WireCast
- vMix
- VirtualDub
- VidBlaster
- OBS Project
- Adobe Flash Media Encoder

Firmware Upgrades

All cards in the XtremeLC range allow firmware upgrades to be completed on site rather than returning the card to EMS. Whenever a firmware upgrade is performed, the **J4 Link MUST BE FITTED** on the **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 **J4** link then powering up the system with the link removed. Once the system has rebooted, replace the **J4** 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 **J4** link is fitted.

+ Specifications

XtremeLC-HD

Board Format	PCIe Gen 1 x4 low profile plug-in card
Dimensions	103mm x 64mm (LxH)
Connector	HDMI
Capture Rate	297Mp/s
Maximum Capture Resolution	2560x1600 at 60Hz 3840x2160p at 30Hz (UHD)
Transfer Rate	800MB maximum DMA transfer rate
Hardware Colour Space Conversion	30 / 24 / 16bit RGB (4:4:4) 16bit YUV (4:2:2) 12bit YUV, NV12, YV12 (4:2:0)
Audio Support	Stereo pair PCM audio via HDMI channel at 16 bits in depth, sampling options include 44.1/48/96 kHz
Low Latency	LiveStream Capture, Single frame time plus DMA transfer of final line
Operating System Support	Windows® Vista / 7 / 8 / 8.1, Windows Server 2003, Windows Server 2008, Windows 10, and Linux®
Power Requirements	Max current at 1A 3.3V Max power =3.3W
Operating Temperature	0 to 35 °C (32 to 96°F)
Storage Temperature	-20 to 70 °C (-4 to 158°F)
Relative Humidity	5% to 90% non-condensing
Warranty	3 years

XtremeLC-HD2

Board Format	PCIe Gen 2 x4 low profile plug-in card
Dimensions	103mm x 64mm (LxH)
Connector	2 x HDMI
Capture Rate	Channel 1 - 297Mp/s Channel 2 - 165Mp/s
Maximum Capture Resolution	Channel 1 - 2560x1600 @ 60Hz, 3840x2160p @30Hz (UHD) Channel 2 - 1020x1080p @ 60Hz
Transfer Rate	1.6GB maximum DMA transfer rate
Hardware Colour Space Conversion	30 / 24 / 16bit RGB (4:4:4) 16bit YUV (4:2:2) 12bit YUV, NV12, YV12 (4:2:0)

Audio Support	Stereo pair PCM audio via HDMI channel at 16 bits in depth, sampling options include 44.1/48/96 kHz
Low Latency	LiveStream: Capture, Single frame time plus DMA transfer of final line
Operating System Support	Windows® Vista / 7 / 8 / 8.1, Windows Server 2003, Windows Server 2008, Windows 10, and Linux®
Power Requirements	Max current at 1.5A 3.3V Max power =5W
Operating Temperature	0 to 35 °C (32 to 96°F)
Storage Temperature	-20 to 70 °C (-4 to 158°F)
Relative Humidity	5% to 90% non-condensing
Warranty	3 years

XtremeLC-SDI

Board Format	PCIe Gen 1 x4 low profile plug-in card
Dimensions	103mm x 64mm (LxH)
Connector	SDI-BNC
Maximum Capture Resolution	SD-HD-3G Level A and Level B at 60Hz
Transfer Rate	800MB maximum DMA transfer rate
Hardware Colour Space Conversion	30 / 24 / 16bit RGB (4:4:4) 16bit YUV (4:2:2) 12bit YUV, NV12, YV12 (4:2:0)
Audio Support	Stereo pair PCM audio via SDI input at 16 bits in depth, sampling options include 44.1/48/96 kHz
Video Modes	SD-SDI (480i/576i) ST-259, EBU 3276 HD-SDI (up to 1080i) ST-260, 274, 296 3G-SDI (up to 1080p) ST-274, 296 2K Digital Cinema modes ST-2048-2
Low Latency	LiveStream: Capture, Single frame time plus DMA transfer of final line
Operating System Support	Windows® Vista / 7 / 8 / 8.1, Windows Server 2003, Windows Server 2008, Windows 10, and Linux®
Power Requirements	Max current at 1A 3.3V Max power =3.3W
Operating Temperature	0 to 35 °C (32 to 96°F)
Storage Temperature	-20 to 70 °C (-4 to 158°F)
Relative Humidity	5% to 90% non-condensing
Warranty	3 years

+ Certifications and Compliances

CE

EU- Class A Declaration of Conformity

EMS Ltd declares that the capture card covered in this User Guide complies with the essential requirements and other relevant provisions of Directives 2001/108/EC and 2011/65/EU.

A copy of our Declaration of Conformity is available on request:

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FCC

These devices comply with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.



Caution. Changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Electronic Modular Solutions Limited

Electronic Modular Solutions offers the best devices to support the visualization and imaging needs of a diverse market. Our products are not just cost-effective, but most of all, also very user-friendly as we strive to support every industry's productivity and efficiency.

From image capture to video wall display and management, Electronic Modular Solutions has the right products for your needs. Designed and developed in the U.K., our products cater to all professionals from different industries. Whether you need an imaging device for your control rooms, home media entertainment, digital cinema for a wide audience, business presentations, virtual reality simulations, or even those related in the health, defense, and aerospace industries, count on EMS to deliver the finest technology.

Technical Support

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

Via Email

Send an email to support@ems-imaging.com 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
- EMS Hardware / Software
- The exact nature of the problem - and please be as specific as possible.

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