XtremeDV-UHD2

User Guide

Version 1.0.0
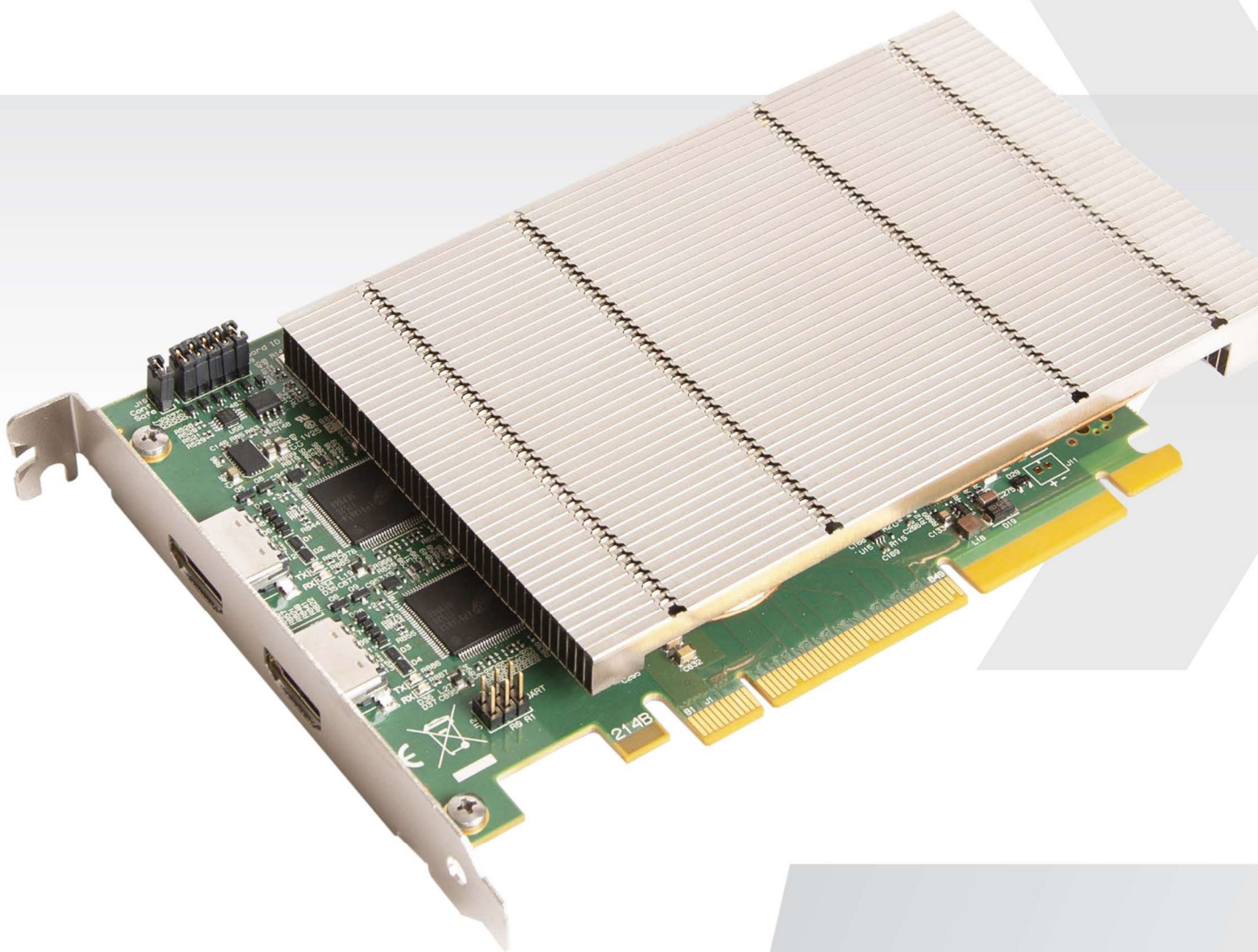
Table of Contents

➕ FCC Statement

Note: 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 his own expense.

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

✚ Introduction

Congratulations on your purchase of the XTREMEDV-UHD2 . This high-performance capture card provides highest resolution video offering both detail and colour accuracy when creating the most stunning visual displays. From command and control rooms to reception areas, collaboration environments and digital signage applications, the XTREMEDV-UHD2 ensures the very best quality and ultimate customer satisfaction.

Providing two HDMI 2.0 capture channels with HDCP 2.2 at 4K60p with full 4:4:4 chroma sampling, the XTREMEDV-UHD2 compliments our hugely successful XtremeDV- capture card family and offers unparalleled performance in frame grabber technology.

Features

- Two independent HDMI 2.0 capture channels with HDCP 2.2 SUPPORT.

- x8 PCIe Gen.3 interface providing 6GB/s total capture bandwidth.

- 2GB of frame buffer memory.

- Full 10-BIT signal processing.

- Includes the XtremePerformance Feature set.

Xtreme Performance Features

LiveStream

- Low latency video and audio capture minimises the delay prior to post processing.

MultiStream

- Independently control and route up to 16 video clients per card. These can all be on the same input or split between inputs.

Powerful hardware scaler

- Adjust the incoming video size to your requirements in real time without incurring latency or using CPU resources.

Text and bitmap overlay

- Overlay text and images onto the capture buffer.

Automatic video signal detection

- Accurate signal detection for all signal sources.

Colour Space Converter

- Format converter eliminates the need for user post processing.

Hardware Timestamping

- Provides precise knowledge of when a frame is captured.

Flexible and configurable EDID Management

- Allows programming of custom EDID parameters for capture cards using the Xtreme Configure dialogue.

Support for third party graphics cards

- Compatibility with AMD DirectGMA.

- Compatibility with Nvidia GPUDirect .

✚ Unpacking

Your packing box contains the following items:

- XTREMEDV-UHD2 - Dual HDMI 2.0 capture card.
- Safety Instructions.

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 XTREMEDV-UHD2 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 /or a cross head screwdriver for the installation of the XTREMEDV-UHD2 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.

1. Remove the PC cover.

2. Locate a vacant PCI Express slot (x8 or X16) on the motherboard and remove the blanking plate (retain all screws).

3. Reconnect all cables to the PC then connect HDMI cables* (not supplied), distributing the video source signal to the HDMI connectors on the XTREMEDV-UHD2 capture card.

4. Power up the PC and commence the software installation.

How to Connect Input Sources

The XTREMEDV-UHD2 card has two HDMI connectors, input 1 at the top and input 2 at the bottom. See Fig. 1.
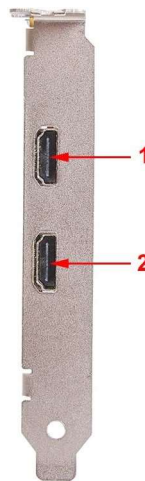

Fig. 1

Care must be taken not to damage the connectors internally by forcing cables into the card (Fig. 2).

Fig. 2

Ensure all cables are fully inserted, failure to do so can result in cables falling out and the captured signal being lost.

* Note: It is recommended that only authentic cables, approved and certified by HDMI are used with the XTREMEDV-UHD2 card. When capturing 4k60p, Premium Certified cables should be used.

Certified cables have a hologram/QR coded label attached.

➕ Changing Input / Grouping Order

By default, the Xtreme software will identify the input order of the cards installed in the system, allocating an input number as cards are discovered. If the user wishes to change the order either by grouping specific types of Xtreme cards or by assigning specific inputs then the J9 links should be set as per the following illustration.

Direct Show users please note:

In addition, if a DirectShow application is used, the dplinks.exe is required to be run to reflect the new input configuration within the DirectShow filter.

To run the dplinks program open the "Run" by clicking on Start button and type dplinks and then press

Enter. The program will run, however no notifications are displayed.
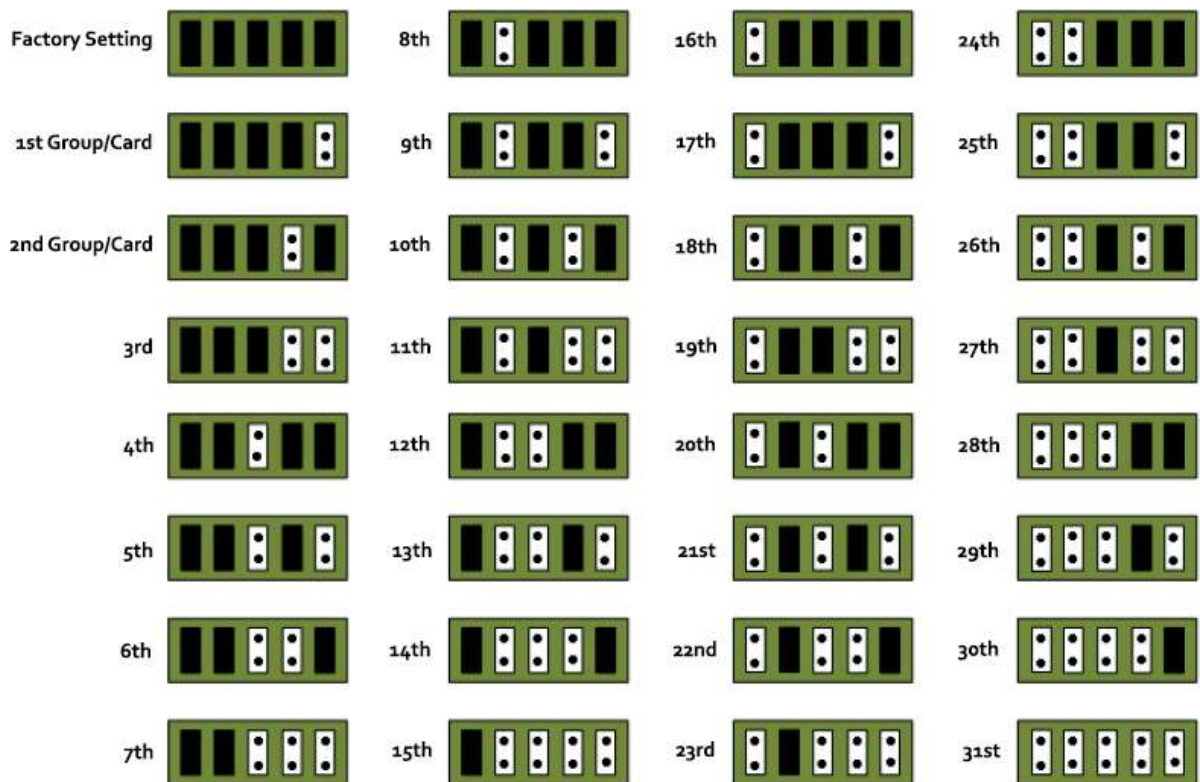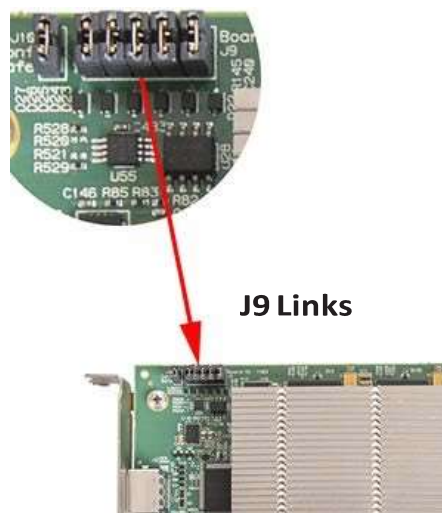

Fig. 3

J9 Links

Fig. 4

✚ Firmware Upgrades

We are continuously developing the technology used within our product ranges and from time to time we may issue firmware upgrades. The XTREMEDV-UHD2 cards allow firmware upgrades to be completed on site rather than returning the card to EMS. 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) the card has a back-up facility to enable the software to automatically detect and reprogram the upgrade.

✚ 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

✚ Software Features

Xtreme Application Overview

Xtreme capture cards are supplied with a powerful software application for configuring the format of the input sources and displaying the data in various ways.

The Xtreme application is available when a Xtreme window is

opened: Start | Programs | Xtreme| Xtreme window
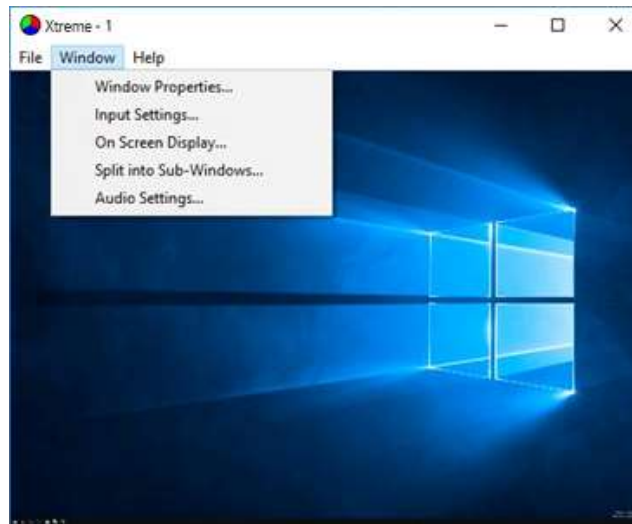
The application displays the connected source in a window; it has the following features:

•   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.

•   Maintain the aspect ratio of the displayed captured data.

•   Cropping.

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

•   Command line interface.

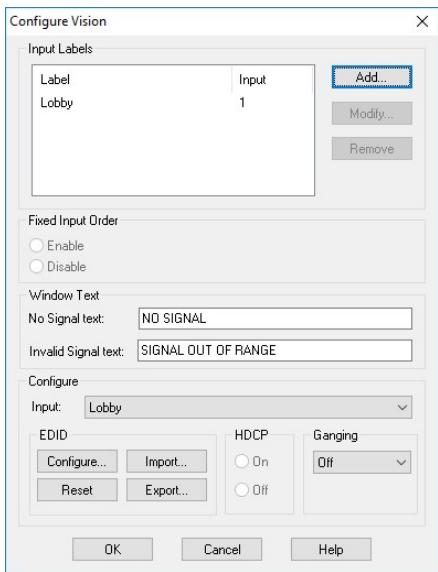•   Help file documenting all features.

Xtreme Configure

Xtreme Configure is a comprehensive EDID management tool which enables the user to program custom EDID parameters for all capture cards.

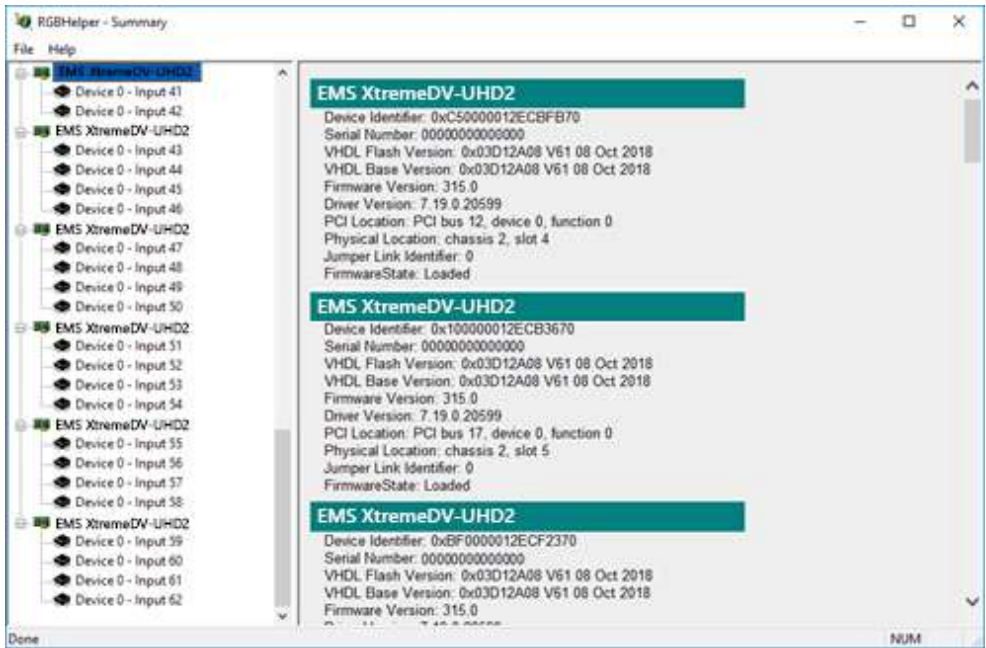To open the Xtreme configure

dialogue: Start | Programs

|Xtreme|XtremeConfigure

Xtreme Configure.......

RGB Helper

RGB Helper is a diagnostic tool providing detailed information for each EMS Xtreme card installed in your system. To open, click on the Start button and type RGB Helper and select the RGBHelper.exe file:

Each Xtreme card is listed in the Summary panel, giving specific details of the cards including serial numbers, driver version and firmware version.

Click on a device and details of that particular device/input is displayed:
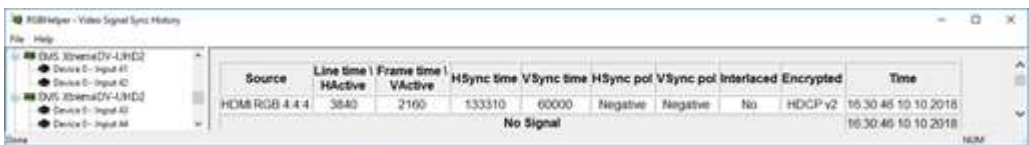
RGB Helper also allows the user to extract diagnostic information which may be useful to support staff should any problems arise with your XTREMEDV-UHD2 card. To create a diagnostic file open the **File** menu and select **Dump Diagnostics**. A dump file is then created and can be forwarded to EMS support staff.

Video Streaming

The provided Microsoft® DirectShow / Media Foundation source filters provide support for a plethora of applications used for encoding, recording and network streaming of captured video. Typical and commonly used applications include:

- Dataton Watchout
- PanOpto
- vMix
- Telestream Wirecast
- Opencast Video Solution
- VidBlasterX
- Open Broadcaster Software (OBS)
- Adobe Flash Media Live Encoder
- VLC.

A Video for Linux (V4L) driver package is also available for download.

Any application compatible with the Microsoft® DirectShow / Media Foundation framework will enumerate the video capture device and provide the user with the main features of the card.

Supported API's

EMS offers two powerful and intuitive options for third party application development:

EMS RGB Easy SDK and Microsoft® DirectShow / Media Foundation.

- Cropping support on all inputs.
- Start and Stop capture on all inputs.
- Input Ganging for synchronising multiple inputs.
- Control the video transfer formats.
- Enable LiveStream for lower latency.
- Synchronization of multiple inputs across multiple cards.
- Synchronize systems using network clock synchronization.
- For edge blending and other applications.

Usage of these interfaces is described in detail within the user documentation provided in the downloadable driver package.
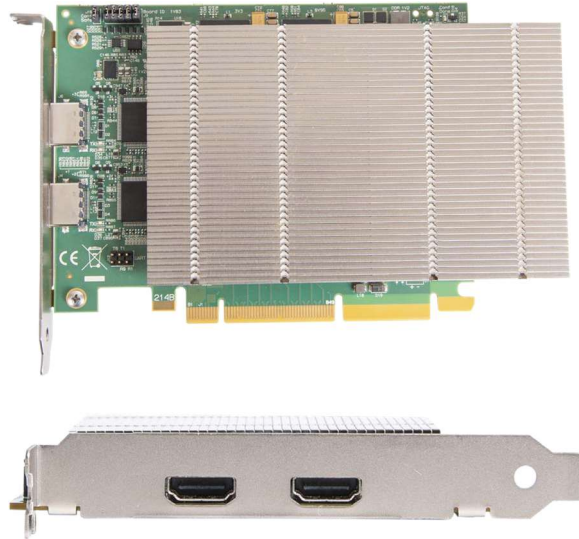
Graphics Support and HDCP Content

The XTREMEDV-UHD2 captures data and stores it in an on-board video buffer which is then transferred using DMA to the host system for display, storage or streaming.

When choosing to display the captured video, there are a number of supported options including EMS, Intel, NVidia and AMD. Alternatively, captured frames can be sent to a system memory buffer for a user application to process and render separately.

When a XTREMEDV-UHD2 is used with an EMS graphics card, highly efficient video drivers transfer large volumes of video traffic directly to the graphics card's video memory for best possible performance. Capture and rendering of HDCP protected content is possible in this case, whilst allowing full colour quality, video resolution and frame-rate to be retained.

When a third party Direct3D compatible graphics card is used, data can still be transferred using DMA and achieve similar performance benefits using either GPUDirect (NVidia) or DirectGMA (AMD), but HDCP protected sources cannot be supported in this case.

➕ <u>Specification</u>

Board Format	PCI-Express x8 plug-in card, 110MM x 177mm (incl heat sink)
Connectors (main board)	Dual HDMI 2.0
Maximum Capture Rate	600MHz TMDS Clock
Frame Buffer	2GB
Input Mode Detection	Automatic
Pixel Transfer Formats	Colour space conversion allows captured data to be transferred in any format: RGB:5-5-5, 5-6-5 or 8-8-8 (24BIT/32BIT) YUV: 4:2:2 MONO: 8bit YUY2 UYVY YVYU Planar Modes: NV12, YV12
Colour Spaces	BT2020, BT709, BT601 WITH selectable limited and full range encoding
Update Rate	Captured frame rate will match the source providing PCIe bandwidth is not exceeded. Multi-buffered to eliminate tearing artifacts.
Video Modes	HDMI 2.0, HDMI 1.4, HDMI 1.3 and DVI
Operating System Support	Windows 8/10, Windows 7, Windows XP, Windows SERVER2008, Windows Vista, Windows Server 2003
Power Requirements	Max current at +3.3V - 1A. Max current at +12V - 1.6A Max power ≈ 22W
Operating Temperature	0 to 35 ºC (32 to 96ºF)
Storage Temperature	-20 to 70 ºC (-4 to 158ºF)
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 specification may change from time to time.

EMS Limited

Technical Support

Registered users can access our technical support team via direct email or through the Support page on the EMS Web Site. You will receive 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 (including serial numbers).

- The exact nature of the problem. Please be as specific as possible.

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

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Index