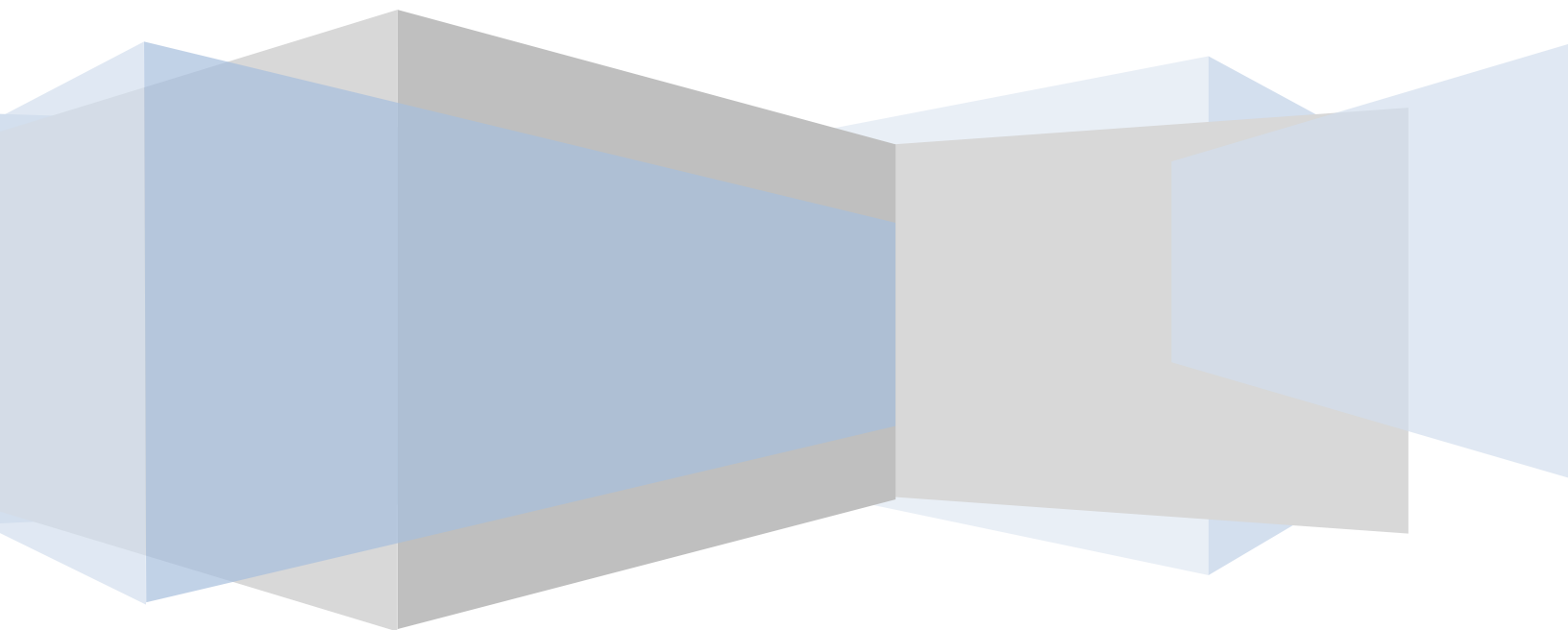


Amped Five

Product Information Guide

USA, CANADA, MEXICO

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Amped Five: designed by forensic professionals for forensic professionals

“Inadmissible” is word that none of us like to hear. As forensic imaging scientists we know that the quality of image and video evidence can often compromise the outcome of a case. To solve all types of problems and react to all types of situations, we designed Amped Five with an uncompromising approach and attention to detail to provide cutting-edge performance and quality analysis of evidence. Amped Five is the most complete software for enhancing and analyzing images and videos for forensic investigators. A single tool kit to analyze both crime scene photos and enhance surveillance/intelligence video designed specifically to meet the forensic professional’s needs. Amped Five is designed to do a lot of things, but “inadmissible” is not one of them.

Overview

Amped Software is a world leader in image processing software specifically designed for investigative, forensic and security applications. Its primary purpose is to provide forensic investigators a complete and unique solution to process and analyze digital images and video data in a simple, fast and precise way.

Amped Five has been designed in cooperation with several specialized institutions and university researchers experienced in forensic science and criminology to provide a complete set of tools for gathering evidence. The concept of Amped Five was in fact, from the offspring of a joint venture between the Scientific Investigation Department of Carabinieri (Italian Military Police) National Crime Lab and the Image Processing Laboratory of the University Of Trieste, which is well known for its forensic activities. Amped Five is currently deployed all over the world by police investigators, judicial investigators and magistrates, military intelligence and operations, and private security contractors.

Through processing and analyzing both still and video images, then utilizing a clear workflow to present evidence that withstands the scrutiny of the courtroom, Amped Five is the forensic investigator’s trusted partner. Thanks to its revolutionary technology, Amped Five allows investigators to solve a wide range of problems which are otherwise easily missed. Since Five is self-contained, it can help to dramatically reduce the time required to process data and improves the success rate of the treated cases, from the restoration of low quality CCTV video to fingerprint analysis.

Amped Five Unique Advantages

1. A single complete set of tools designed from top to bottom for forensic and security professionals: all needed functions in one software package for both static image and video.
 2. Five is high performance. Tools to target any type of data, from CCTV recordings and dash cam video to crime scene digital photos and fingerprint enhancement.
 3. Support for any image and video format without additional expensive format tools and filters. Five is ready to work, straight from the box.
 4. With more than 60 different filters included as standard to enhance and analyze images and videos, Five is both budget friendly and a complete package. Five does not require additional plug-ins or third party software.
 5. One uniform user interface. Work in the same way with single images, sequences of images and videos.
 6. Everything is done in real time. Dramatically reduce time and effort with the ability to modify any parameter of any operation in any order; the results can be seen immediately. Even while playing a video file.
 7. Built-in security and robust file authentication to detect any tampering or unauthorized modifications or changes so that all evidence is secure.
 8. Automatic report generation, including the sequence of all operations applied to all files, the used parameters and a detailed description of their usage and implementation.
 9. Available in multiple languages (English, Chinese, Italian, Polish, others available soon).
 10. Five will work with your platform. Because Five is compatible with standard PCs (Windows XP, Vista, Windows 7, 32 bit and 64 bit versions), the time and cost to deploy are minimal. As hardware standards change quickly, Five does not bind you to a platform that will soon be obsolete. Amped Five shows a clear advantage over competitors in cost effectiveness in budget analysis based on total life-cycle cost.
- A Mac OS X version is also currently in development, inquire for more information.

AMPED FIVE FEATURES

General Features

- Uniform user interface and workflow: Load, save, process, analyze in the same way for single images, sequences of pictures, or videos.
- Instant results: add, configure, move, and modify an unlimited number of filters, in real time even while playing video.
- Intelligent and repeatable: automatically apply the same filters sequence to different files to avoid resetting all filters for different images from the same source or environment.
- Apply the filters only to a region of interest of the image, or select frames of interest in a sequence.
- Flexibility with technology: choose between classical standard techniques or latest state-of-the-art algorithms.
- Precise control over images: operate with pixel level precision on selections and measurements on images.
- Document evidence that wins: Amped Five can automatically generate detailed reports so that the investigations process is clearly documented.

File Formats: Compatible with All Standard File Types

- Load image files from the most common formats, such as bitmap, jpeg, tiff, targa, jpeg2000, png.
- Load video files from almost any digital format, sourced from NTSC, PAL and almost any other system such as mobile phones and internet content; users can decode most video formats by using internal libraries and codecs. Amped Five's complete internal library allows decoding even if your system does not have the required codecs installed.
- Convert a sequence of static images to present and control as if it were video. Transcode video to a different format or transform it into a sequence of images or vice versa.
- Multiple video frames may be selected in either a consecutive or random sequence.
- Five is secure. You can easily check for unauthorized modifications by verifying the file hash-code to maintain strict evidence handling procedures to avoid contamination that could lose a case.
- Visualize images Exif data.

Image Editing Functions

- Standard image editing features allow the user to instantaneously apply basic editing functions such as crop, flip, color to grayscale conversions, channel extraction, zoom and image rotation.
- Correct geometric distortions caused by wide angle lenses. Amped Five also allows the user to convert images taken from an omnidirectional camera to a panoramic format.
- Correct the perspective in order to see the picture of the scene from a different angle.
- Resize the image with advanced algorithms, which ensures a higher definition than would be obtained with common interpolation algorithms used in other software.
- Convert interlaced videos into progressive ones without loss of information.
- Improve contrast and brightness manually, adjusting intensity curves, or speed workflow with automatic enhancement algorithms.
- Analyze images with various threshold and edge detection filters.
- Measure real world distances, heights, and lengths from images or video frames using Five's advanced measuring tool.

Image and Video Filtering Functions

- Improve image details (unsharp masking, rational sharpening).
- Reduce noise (averaging, Gaussian, median, bilateral, rational smoothing filters).
- Apply custom kernel filters.
- Reduce compression artifacts with deblocking algorithm.
- Remove interferences or image background (such as banknote watermark) with Fourier filter.
- Correct optical and motion blur resulting from fast movement or lack of focus.
- Remove noise from a video with temporal smoothing and frame integration.
- Improve shaking video with image stabilization.
- Correct and modify the camera viewpoint in different frames with perspective alignment.

PURCHASE INFORMATION

Flexible Solutions to Meet Customer Needs: Available Editions

Amped Five Express

Amped Five Express is the version of Five focused on quick enhancement of surveillance video. While the core of the software remains the same, Amped Five Express offers all the most common functions to cope with CCTV video. Amped Five Express provides a great mix of features priced well for security or portable use.

Amped Five Professional

Amped Five Professional offers all the functions of the Express version, plus the industry leading features of:

- Automatic report generation
- More advanced image processing functions for video surveillance
- Filters useful for more specific cases, such as crime scene photos and fingerprints
- Measuring functions

Amped Five Professional is the premier choice for a busy crime lab or agency that requires high performance features at an attractive price.

Licensing

Amped Five package includes:

- Installation DVD
- USB copy protection dongle
- Printed illustrated user manual

The standard license is valid for use on one workstation. For deployment to multiple sites or multiple workstations, please inquire for pricing and licensing options.

Available Languages

Amped Five is in use by investigators and crime labs worldwide and is currently available in English, Italian, Chinese and Polish. All languages are included in the software and can be switched freely by the user. The printed manual is in one of the available languages, chosen by the customer at time of purchase.

Hardware Requirements

Suggested configuration for PC Version:

- Intel Core 2 Duo or faster
- Minimum of 4 GB of RAM for fast image processing
- 1GB of free space on the hard disk for Amped Five program files.
- Windows XP Professional, Windows Vista Professional and Ultimate (x86/x64); or Windows 7 Professional, Ultimate and Enterprise (x86/x64); as well as Windows Server 2008.
- If you require assistance with selecting a platform, please ask us.

ADDITIONAL SERVICES

Support and Maintenance (Amped Five Support)

One year of upgrades and tech support included in the purchase price. Amped Five includes technical support via email and software upgrades for the first year after the purchase. Additional years of support plans are available as well and may be purchased at any time. Please inquire for details and pricing.

We offer flexible programs to meet our customer's budget. Renewal of support is not mandatory, so the license purchased is still valid and it can be still used even without a support plan without further obligation. Continued software upgrades and technical support require the purchase of a qualified support plan.

Training (Amped Learning)

Amped offers optional training classes on the usage of Five. Duration and location of the courses may be decided together with customers to best meet the needs of the end-user.

Customization (Amped Project)

To meet specific agency, department, or unit needs, it is possible to customize Five in order to add or modify existing features. Feasibility, prices and times, will be discussed case by case. We also are available to cooperate and license our cutting-edge technology to third party projects related to software development and image processing for forensics and security.

Financial Assistance

For US customers, grants may be available to finance the cost of Amped Five. Amped Software North America can assist qualifying local, state, and federal agencies in obtaining federal grants to procure Amped Five. Please contact us for details: grants@ampedsoftware.com

TECHNICAL SPECIFICATIONS

Amped Five General Features

Feature	Description	Professional	Express
Image Format	Any standard image format (i.e. jpeg, tiff, png, bmp, targa...).	✓	✓
Video Format	Any standard video format (avi, flv, 3gpp, wmv, mov), also without the need of the codec installed on the system. Expandable by system codecs.	✓	✓
Image Server	Loads surveillance video from a Milestone XProtect Server	✓	✓
Print Image	Print generated images.	✓	✓
Report Generation	Automatic generation of a report containing all the scientific details of the processing and the bibliographic references to the algorithms in HTML format.	✓	
File Authentication	Verify alteration of image and video files in saved projects.	✓	✓
File information	Display information about the file formats.	✓	✓
Exif data	Display Exif data contained in digital images.	✓	✓
Image information	Display current image morphological and statistical features.	✓	✓
Video playback	Advanced video playback with frame by frame navigation, adjustable framerate and jog controls.	✓	✓
Visualization	Custom zoom on an area of the image and colorspace selection.	✓	✓
Supported Languages	Available in English and Italian (both software and documentation)	✓	✓
Supported Platforms	Save all the frames as separate image files.	✓	✓
Processing Workflow	Instant results: add, configure, move, and modify an unlimited number of filters, in real time even while playing video..	✓	✓
Samples and tutorial	A rich collection of example and self learning lessons to start from basics and face the most common cases.	✓	
Supported Platform	PC (Microsoft Windows) and Mac (OSX).	PC / MAC	PC
Reference Manual	Printed version of the reference manual and training tutorials.	✓	

Amped Five Processing Filters

Filter	Functional Description	Professional	Express
LOAD	Loads image and video files.		
Image Loader	Loads an image from file.	✓	✓
Sequence Loader	Loads a list of images and treats them as a video.	✓	✓
Video Loader	Loads a video clip from file.	✓	✓
Image Paster	Copy the image from a buffer to a source file.	✓	
Milestone Client	Connect to a Milestone XProtect image server.	✓	✓
WRITE	Save image and video files.		
Image Writer	Writes the current image to a file.	✓	✓
Sequence Writer	Save all the frames as separate image files.	✓	✓
Video Writer	Writes the current video to a file.	✓	✓
SELECT FRAMES	Select video frames.		
Single Selector	Selects a single frame.	✓	✓
Range Selector	Selects frames within an interval.	✓	✓
Sparse Selector	Selects a list of frames in random positions.	✓	
EDIT	Edit image geometric features.		
Crop	Crops a region of interest of the image.	✓	✓
Flip	Mirrors the image.	✓	✓
Rotate	Rotates the image.	✓	✓
Grayscale Conversion	Converts the image into grayscale.	✓	✓
Resize	Resizes the image (zoom).	✓	✓
Deinterlace	Converts interlaced videos into progressive ones.	✓	✓
Undistort	Corrects the geometric distortion, caused by capturing devices' optics.	✓	✓
Correct Perspective	Removes the perspective effect on a plane of interest in the image.	✓	✓
Unroll	Converts an omnidirectional (dome camera) image to a panoramic one.	✓	
Extract Channel	Extracts a channel from the image.	✓	
ADJUST	Adjust image values.		
Contrast/Brightness	Adjusts the contrast and brightness value.	✓	✓
Hue/Saturation/Value	Adjusts the hue, the saturation and the value of the image.	✓	✓
Curves	Adjusts the image values according to the desired curve.	✓	✓
Levels	Adjusts the image values according to the desired curve.	✓	
Histogram Equalization	Improves the image contrast by equalizing the histogram of its values.	✓	✓
Contrast Stretch	Improves the image contrast by expanding the range of intensity values.	✓	
ANALYZE	Analyze image features.		
Negative	Does the negative of the image.	✓	

Filter	Functional Description	Professional	Express
Threshold	Cuts image values to the desired threshold(s).	✓	
Adaptive Threshold	Extracts the edges with adaptive threshold algorithm.	✓	
Laplace	Extracts the edges with a Laplacian filter.	✓	
Sobel	Extracts the edges with a Sobel filter.	✓	
Scharr	Extracts the edges with a Scharr filter.	✓	
Canny	Extracts the edges with a Canny filter.	✓	
Linear Filter	Filters the image with a user-defined kernel.	✓	
MEASURE	Extract real-world measurements from the image.		
Measure 1d	Computes world measurements from single images with one supplied reference distance.	✓	
Measure 2d	Computes world measurements from single images by using two known distances as reference.	✓	
Measure 3d	Computes world measurements from single images by the 3D reconstruction of the scene and by using a known distance as reference.	✓	
SHARPEN	Enhance image details.		
Unsharp Masking	Sharpens the image with an unsharp masking filter.	✓	✓
Laplacian Sharpening	Sharpens the image using a sharpening filter.	✓	✓
Rational Sharpening	Enhances the image details without amplifying the noise.	✓	
Denoise	Reduce the image noise.		
Averaging Filter	Smooth the image with an averaging filter.	✓	✓
Gaussian Filter	Smooth the image with a Gaussian filter.	✓	✓
Bilateral Filter	Smooth the image with a bilateral filter.	✓	✓
Rational Smoothing	Reduces the noise without affecting the details.	✓	
Median Filter	Reduces the impulsive noise with a median filter.	✓	✓
RESTORE	Repair the image by known disturbs.		
Deblocking	Reduces blocking artifacts caused by lossy compression.	✓	✓
Motion Deblurring	Corrects the blur of moving objects.	✓	✓
Optical Deblurring	Corrects the blur of objects which are out of focus.	✓	✓
Blind Deconvolution	Corrects the blur of objects out of focus with blind deconvolution.	✓	
Fourier	Removes periodic noise and interferences in the Fourier domain.	✓	
Line Shift	Shifts lines horizontally.	✓	
INTEGRATE	Enhance image by multiple frames.		
Temporal Smoothing	Reduces the noise by making an average between the current and the previous frames.	✓	
Frame Averaging	Reduces the noise by creating an image which is the average of all the frames.	✓	✓
Motion Smoothing	Reduces the noise by considering moving objects.	✓	
Local Stabilization	Stabilizes an object of interest of a shaking video.	✓	✓
Global Stabilization	Stabilizes the overall scene of a shaking video.	✓	
Perspective Registration	Aligns the perspective of different images of the same subject, taken from different points of view.	✓	

Amped SRL: About Us

Amped is an award winning dynamic company specialized in developing software solutions for image and video processing for forensic and investigative applications. With strategic partners across the world, Amped strive to exceed the ever-evolving requirements and anticipate the needs of our customers. Amped was created out one clear and profound vision: “To be the world’s premier creator of forensic image analysis software”.

Amped was founded in 2008 by experienced engineers working with the Image Processing Laboratory at the University of Trieste and the Italian Carabinieri Scientific crime lab in Parma with the single mission to create software that every forensic video analyst would dream of, the one stop shop for any image and video processing need related to security and investigations. As working forensic scientists, we did not find one single product that met all of our needs. We found that products offered were a compromise of features or were incomplete and required other software to accomplish common tasks. Since nothing met our standards, we decided to create Amped Five as an uncompromising product. Since its inception, Amped has been recognized as an innovator in the national and international arena. In 2008, barely a year from its founding, Amped was awarded the best Italian start-up at the Tech Garage business competition, held during SMAU trade-show. In 2010 Amped has been presented in the book “Winning Italy: Almanac of Italian Excellence” by the Ministry of Foreign Affairs, which highlights significant innovation and achievements by Italian companies and individuals. Amped was highlighted as a leader in scientific accomplishments in a world class group which featured prominent companies such as Ferrari and senior “Big Bang” CERN researcher, Lucio Rossi.

The foundation to everything we continue to achieve is an uncompromising commitment to advancing the capabilities of our customers.

Amped Software North America is Amped SRL’s partner serving the Public Safety, Commercial Security, and Defense markets in the United States of America, Canada, and Mexico. With a well-earned reputation for innovation, quality, and leadership; Amped Software N.A. provides full service sales, training and technical support for Amped products.

Amped SRL

Amped Software North America

Serving the USA, Canada, and Mexico:

A	AREA Science Park, Padriciano 99, 34149 Trieste – Italy	4313 W Sahara Ave, STE 437 Las Vegas, NV 89102 USA
W	http://www.ampedsoftware.com	http://www.ampedsoftware.com
M	info@ampedsoftware.com	info@ampedsoftware.com
P	+39 040 3755333	+1 (702) 498-0738
F	+39 040 3755335	CAGE: 6CLY6 DUNS: 968034780