FUSION PULSE

VILBER LOURMAT

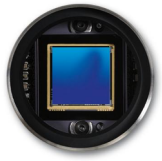
FUSION

PULSE

VILBER LOURMAT

Best in class

- Outstanding sensitivity
- Lowest noise floor
- Deepest cooling
- Superior resolution
- Largest range of application
- Largest field of view
- Fastest acquisition process
- Widest dynamic range
- Best raw data protection
- Quantitative stability
- High Sensitivity Reading (HSR) technology
- Widest build-in application library
- Best band revelation
- Best signal response linearity
- Clarity ™ technology
- Best and unrivalled V.084 optical lens
- Exclusive Apps Studio library
- 3D Dynamic Scan technology



The speed of light

The Pulse is a high-end ultra-sensitive scientific camera platform, designed to extract the lowest level of detection from your protein or DNA sample. Whether you need a dedicated chemiluminescence system or a multimodal platform with chemiluminescence and multispectral imaging, we can provide you the best solution.

Our superior sensitivity, resolution and dynamics provide optimal performance across a large array of applications. There is no need to compromise. The Pulse system is ready to work for your most demanding chemiluminescence, bioluminescence, multiplexing or fluorescence applications.

Our advanced set of performance is ideal to image with high fidelity and to allow quantitative scientific measurements. The Fusion systems' cameras use the latest generation of sensors and semi-conductors. Combined with our unique High Sensitivity Reading (HSR) technology and our V.084 lens, the Fusion is ideal for publication, quantification and documentation grade imaging.

FUSION PULSE.6

The Fusion Pulse.6 is designed for chemiluminescence applications, with optional capabilities for UV or blue fluorescence.

- Chemiluminescence
- Bioluminescence
- Visible imaging
- Optional UV fluorescence
- Optional RGB and IR epi-modules

Apps Studio
3D Dynamic Scan

EVO-6 camera
Sample to lens distance calculation by IR
Smart lens - Motorised - Autofocus

FUSION PULSE.TS6

The Fusion Pulse.TS6 is designed for chemiluminescence applications, with optional capabilities for UV or blue fluorescence.

- Chemiluminescence
- Bioluminescence
- Visible imaging
- Optional UV fluorescence
- Optional RGB and IR epi-modules

Apps Studio
3D Dynamic Scan

Touchscren interface
Build-in computer
EVO-6 camera
Sample to lens distance calculation by IR
Smart lens - Motorised - Autofocus

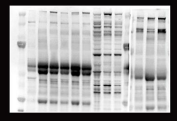
FUSION PULSE.7

The Fusion Pulse.7 is designed for chemiluminescence applications, with optional capabilities for UV or blue fluorescence.

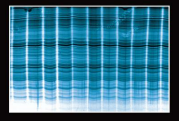
- Chemiluminescence
- Bioluminescence
- Visible imaging
- Optional UV fluorescence
- Optional RGB and IR epi-modules

Apps Studio
3D Dynamic Scan

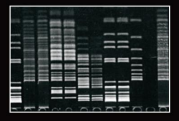
DARQ 7 camera
Sample to lens distance calculation by IR
Smart lens - Motorised - Autofocus



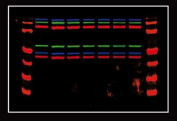
Western blot



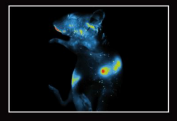
Protein gel



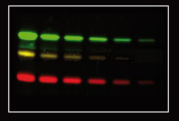
DNA/RNA gel



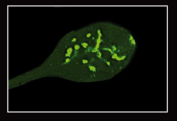
RGB multiplexing



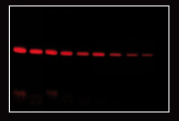
In vivo imaging



IR/NIR multiplexing



GFP



IR Western blot

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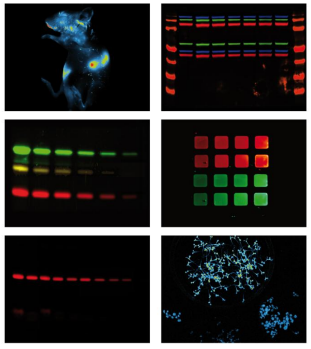
Spectra ready

The Pulse TS can image both chemi-luminescence and fluorescence applications. For fluorescence, the Pulse TS system is easily upgradeable to the LED Spectra module for blue, green, near infrared or infrared illumination.

The Spectra module is ideal for a large array of applications such as Western blot chemi-luminescence, Western blot fluorescence, 1D DNA gel, 1D protein colorimetric samples, stain free gel and blot…

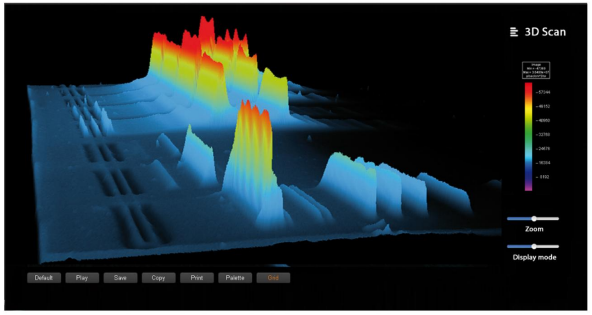


A complete integrated system for Western blot and gel imaging

The unrivalled Pulse TS is ideal for chemiluminescence, bioluminescence and UV fluorescence applications. With the TS system, you can see your blot in the new light of ultrasensitive imaging at speeds never achieved before.

The TS is based on an advanced set of performance ideal to high fidelity and quantitative scientific measurement. The camera modular electronic design and the dual amplifier architecture deliver raw data with virtually no loss of information, no image distortion, no image processing, no pixelization, and with ultimate sensitivity and dynamic range.

The massive metal made Pulse TS darkroom has been designed for long durability and light tightness. With the aid of its integrated processor technology, the intelligent darkroom supervises monitors and controls all system functions. As an example, sensors identify the distance of the object, the intensity of the LED illumination is optimally chosen, and automatic focus can be used.



Features & benefits

- Numerous fluorescence and chemiluminescence predefined imaging protocols at your fingertips
- Same or better sensitivity than a film
- Unique V.084 lens performance
- Super speed image acquisition
- 3D Dynamic Scan Technology
- Long life lasting white light LED for thousands of hours of use
- Intuitive Apps Studio interface
- Instant cooling for fast availability of the system
- High Sensitivity Reading™ Technology for a better signal to noise ratio
- CFR21 Part 11 ready
- Full GLP compliance
- Clarity™ technology for razor sharp band revelation
- SuperResolution™ technology for ultimate megapixel resolution
- Large sensor scientific CCD camera
- Large pixel size
- Pure image integrity and raw data protection
- ImageMaster™ technology to obtain the optimum image at a glance
- Free software for image acquisition and image analysis
- Fast and easy quantification using housekeeping protein
- Intensity of the white light LED illumination automatically adjusted
- Stainless steel, aluminium and steel darkroom for the best robustness
- IR Smart sensors to identify the distance of the object
- Reproducible and comparable quantification data
- Autofocus
- Autoexposure
- Multi-positions filter wheel
- Scientific TIFF file or proprietary file format
- UV, blue, SuperBright or Spectra Pad available
- Pad box multimodal container
- Interchangeable transilluminator
- Choice of filtered EPI UV 254nm, 365nm and blue 470nm

Configurations

Fusion Pulse.TS6

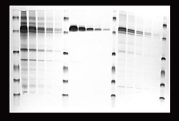
Automatic system with motorised V.084 lens
Build-in computer
5 points touchscreen interface - Magster technology
Dual mode EVO-6 camera
Sample- lens distance calculation by IR detector
SmartCab intelligent darkroom technology
PadBox multimodal container

Fusion Pulse.TS6 software

Apps Studio
3D Dynamic Scan

Options

UV-Pad
Super-Bright-Pad
Sky-Pad: LED blue light transilluminator, 470nm
White-Light- Pad: LED white light transilluminator
Spectra-Pad RGB: Red, Green and blue EPI light module
Spectra-Pad IR-RG: IR, NIR and Green EPI light module
Narrow band emission filters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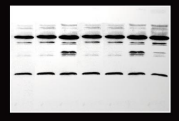
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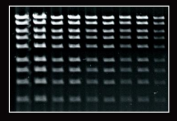
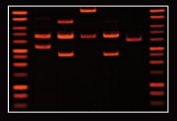
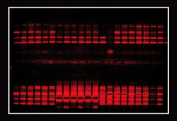
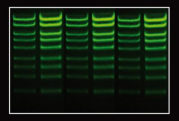
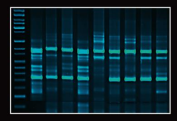
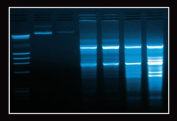

Ethidium bromide


SybrSafe


GelRed


SybrGreen


GFP


FITC

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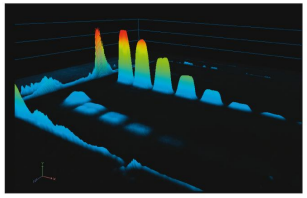
Performance for your blot

The Fusion Pulse is the ideal system for laboratories that need to find an alternative to their film for Western blot imaging using chemiluminescence protocol. It can also be used for any applications using luminescent substrate such as luciferase, luminol or ECL equivalent.
The system does not compromise in terms of imaging performance. The DARQ7 camera offers the deepest Peltier cooling available from any Western blot imaging system on the market, critical for minimization of both noise level and sensitivity.
In standard, the Fusion is equipped with the V.084 lens. The V.084 has unrivalled f/0.84 sensitivity and allows the sample to be at 25cm distance from the camera.



Modular and upgradeable chemiluminescence system

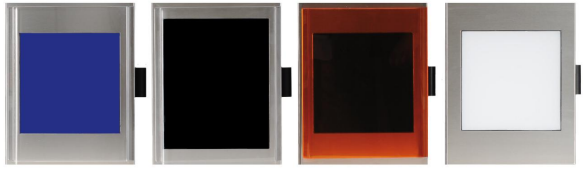
The Pulse system is a modular system with extendable capabilities. The built-in capability of the system is preliminary chemiluminescence and bioluminescene applications. You can then upgrade the system if you need UV fluorescence for your gel or Epi-light module for the fluorescence of your blot. The system can grow according to your laboratory need.

The system is also equipped with a computer detected filter wheel and comes with the Apps Studio and the 3D scan features. Thanks to its modular concept, different options can be added to the system:

- UV Transilluminator
- LED Spectra module
- Fluorescent emission filter
- White light plate
- Blue light conversion screen

The DARQ7 camera offers the deepest Peltier cooling available from any Western blot imaging system on the market, critical for minimization of both noise level and sensitivity. Deep cooling means the low noise advantage can be maintained under all exposure conditions, thus for both chemiluminescence and fluorescence applications.

The massive metal made Pulse darkroom has been designed for long durability and light tightness. With the aid of its integrated processor technology, the intelligent darkroom supervises monitors and controls all system functions. As an example, sensors identify the distance of the object, the intensity of the LED illumination is optimally chosen, and the filter position is automatically recognised according to your application.



Key features

Numerous chemiluminescence predefined imaging protocols at your fingertips
Same or better sensitivity than a film
Unique V.084 lens performance
Super speed image acquisition
3D Dynamic Scan Technology
Long life lasting white light LED for thousands of hours of use
Intuitive Apps Studio interface
Instant cooling for fast availability of the system
High Sensitivity Reading™ Technology for a better signal to noise ratio
CFR21 Part 11 ready
Full GLP compliance
Clarity™ technology for razor sharp band revelation
SuperResolution™ technology for ultimate megapixel resolution
Large sensor DARQ scientific CCD camera
Large pixel size
Pure image integrity and raw data protection
ImageMaster™ technology to obtain the optimum image at a glance
Free software for image acquisition and image analysis
Fast and easy quantification using housekeeping protein
Intensity of the white light LED illumination automatically adjusted
Stainless steel, aluminium and steel darkroom for the best robustness
IR Smart sensors to identify the distance of the object
Reproducible and comparable quantification data
Autofocus
Autoexposure
Multi-positions filter wheel
Scientific TIFF file or proprietary file format
UV, blue, SuperBright or Spectra Pad available
Pad box multimodal container
Interchangeable transilluminator
Choice of filtered EPI UV 254nm, 365nm and blue 470nm

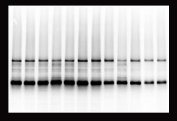
Configurations

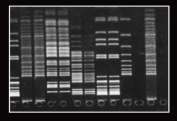
Fusion Pulse
Automatic system with motorised V.084 lens
Sample- lens distance calculation by IR detector
SmartCab intelligent darkroom technology
PadBox multimodal container

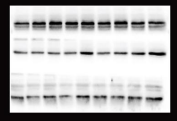
- Fusion Pulse.6 with EVO-6 camera
- Fusion Pulse.7 with DARQ7 camera

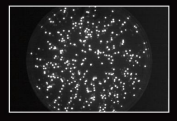
Fusion Pulse software
Apps Studio
3D Dynamic Scan

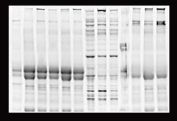
Options
UV-Pad
Super-Bright-Pad
Sky-Pad: LED blue light transilluminator, 470nm
White-Light- Pad: LED white light transilluminator
Spectra-Pad RGB: Red, Green and blue EPI light module
Spectra-Pad IR-RG: IR, NIR and Green EPI light module
Narrow band emission filters

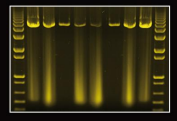

Western blot

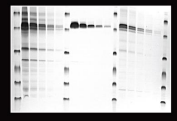

DNA/RNA gel

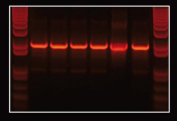

Southern blot


Luciferase assay


Western blot


1D gel


Chemiluminescence blotting


Protein gel

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SmartCab intelligent darkroom technology:
- Software control of the lighting
- Automatic recognition of the sample position
- Automatic visible lighting adjustment
- Autofocus
- Auto-exposure
- Automatic recognition of the Pad model

EVO-6 camera
V.084 lens (motorised)
Sample to lens distance calculation by IR

Software
- Apps Studio
- 3D Dynamic Scan

FUSION PULSE.TS6

SmartCab intelligent darkroom technology:
- Software control of the lighting
- Automatic recognition of the sample position
- Automatic visible lighting adjustment
- Autofocus
- Auto-exposure
- Automatic recognition of the Pad model

Touchscreen interface
Build-in computer
Magster display technology
EVO-6 camera
V.084 lens (motorised)
Sample to lens distance calculation by IR

Software
- Apps Studio
- 3D Dynamic Scan

FUSION PULSE.7

SmartCab intelligent darkroom technology:
- Software control of the lighting
- Automatic recognition of the sample position
- Automatic visible lighting adjustment
- Autofocus
- Auto-exposure
- Automatic recognition of the Pad model

DARQ-7
V.084 lens (motorised)
Sample to lens distance calculation by IR

Software
- Apps Studio
- 3D Dynamic Scan

CAMERAS

EVO-6

Scientific grade CCD camera
Grade 0, zero defect
Image resolution 20 megapixels
Native CCD resolution: 2838x2224
(6.31 megapixels)

1 inch sensor
16 mm diagonal

-55°c maximum cooling diferential from ambient
-30°c absolute and regulated cooling via three stages Peltier thermoelectric cooler

High Sensitivity reading (HSR) technology
USB-3 connection

DARQ-7

Scientific grade CCD camera
Grade 0, zero defect
Image resolution 10 megapixels
Native CCD resolution: 2048x2048
(4.2 megapixels)

1.3 inch sensor - 7.4 µm square pixel
22 mm diagonal

-67°c maximum cooling diferential from ambient
-42°c absolute and regulated cooling via four stages Peltier thermoelectric cooler

High Sensitivity reading (HSR) technology
USB connection

Glossary

Background level: Some degree of noise is always present in any electronic CCD cameras. Even though noise is unavoidable, it can become so small relative to the signal that it appears to be nonexistent. The danger is to have the background level higher than the signal. In that case, the protein signal cannot be seen.

CCD technology: CCD cameras are made of sensors that transfer every collected photon into an electron, namely into digital information. The photons are transferred into pixels. Those pixels will enable the quantification of data.

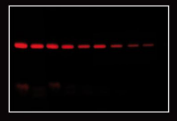
Excitation filter: Our Spectra LED module (RGB and IR) is made of a narrow excitation filter. When you excite your sample stained with a specific fluorophore it is important to use a narrow band pass in order to get as close as possible to the excitation peak required by the fluorophore.

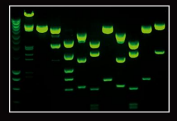
High Sensitivity Reading (HSR) technology: HSR is a proprietary technology which reduces the various source of noise to the lowest floor level so that the lowest signals can stand out from the surrounding background.

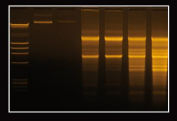
Multiplexing (or multispectral fluorescence): The multiplexing is the multiple analysis of different type of protein on a single blot or gel. Each protein is stained by one specific fluorophore that will react with one specific excitation source. The aim is to localize and see the interaction between different proteins.

Quadruple Peltier stages: A thermoelectric Peltier transforms an electrical current into a temperature difference. Four stages enable to achieve a fast, deep and uniform cooling.

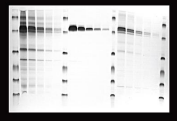
Spectral overlap (or cross-talk): The spectral overlap is an undesirable effect of excitation of 2 different dyes sharing the same excitation range. The overlap could be compensated using the Fusion spectral unmixing algorithm.

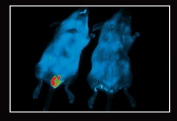

IR imaging

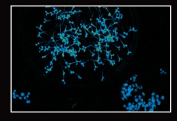

GelGreen


Ethidium bromide


Macro array


Western blot


Small animal imaging


Luciferase on Arabidopsis


Texas Red