

White Paper - Ultra Slo-Motion Camera - Hi-Motion Product Family

The Hi-Motion family of cameras are all full HD digital high-speed camera systems developed by NAC Image Technology for the Broadcast Television Industry. Since the original Hi-Motion was first introduced in 2005, the system has been embraced by broadcasters and sports producers around the world, including the World Cup in 2006, Beijing 2008, Vancouver 2010 and more recently with 22 Hi-Motion II systems at the games in London in 2012, 5 systems at the SuperBowl 2013, 4 systems at the UEFA Champion's League Final 2013.

The excellent slo-motion images, (at up to 20 times slow down) of the Hi-Motion give sports producers and broadcasters dramatic images that show detail and emotion not seen before, that have been used to enhance the coverage and understanding of many sports.

The ease of integration within the standard Outside Broadcast workflow and ease of operation both for the Camera Operator and the Record/Replay operator have led to the rapid acceptance of the Hi-Motion cameras as another part of the Producer and Directors tool kit in telling the story of the match.

The Hi-Motion has several unique features among the competing Ultra Slo-Motion Cameras; the Hi-Motion Cameras are the only with 3 sensor technology, the same as all mainline broadcast cameras; Hi-Motion has the industry standard B4 lens mount so that all of a Broadcasters or Facilities existing standard lenses can be used, without the need for adaptors or modification.

Hi-Motion II was developed jointly by NAC and Ikegami and was launched by NAC and Ikegami at NAB in April 2011, with delivery of the first units early in 2012. The key facts about the camera are; that it builds on all the positive features of the existing Hi-Motion:

- Designed from its inception as a Broadcast System camera
- Industry Standard B4 Lens Mount
- Industry Standard SMPTE Hybrid Fibre (up to 2 Km) between camera head & CCU
- 3 Sensor design for superior colour matching and representation
- Simple & effective workflow
- Instant playback
- Easy to integrate to existing OB workflow
- Full Remote Control
- Ease of use for Camera Operator, Vision Engineer and EVS Operator
- Real-time viewfinders; 2" monocular & 9" colour
- Genuinely operable handheld



Key new features of Hi-Motion II over Hi-Motion:

- System partner to NAC for Hi-Motion II is Ikegami
- Improved Sensitivity by 2-3 stops (Minimum 4X brighter)
- Continuous Live output - separate from the Replay output
- Record & Replay at the same time
- EVS Control Integration "Hypermotion" from an LSM panel.
- Flicker Suppression Circuit for working under lights
- Double Recording Memory to 96GB
- Recording Speed up to 1,000fps (up to 1,500fps in 720P)
- Full Remote Control with full Paint controls
- Effective and usable Shutter
- Stand-alone operation. E.g. On Motorbike or Steadicam with RF Links.
- Radio Camera Systems available from BSI & Broadcast RF.
- Works with standard Telecast "Shed" (Sony/Ikegami) for use on single-mode fibre for long distances transmission from camera to CCU

Sensitivity is f8 at 2,000lux (Measured at 5,600K, 89.9% reflectance at 1080 50). The greatly improved sensitivity of Hi-Motion II is achieved with the use of on-chip micro lenses and with global shuttering. The pixel count is 1920x1080.

Emmy Award winning technology. Hi-Motion camera systems are not only used on the world's top sports event coverage but also as a part of the regular coverage of professional matches; English Premier League Football; Champions League Football; NFL; NBA; MLB; AFL; major international motor racing; International Cricket; Rugby Union & League; Horse Racing; Equestrian etc. The Hi-Motion also won the 62nd Emmy Award (Technical/Engineering Achievement Award) from the National Academy of Arts and Sciences in recognition of all the achievements in sports broadcasting and television production.

Hi-Motion II is available to purchase or rent worldwide. Ikegami are NAC Image Technology's Sales & Support Partner for Hi-Motion II, so please contact Ikegami, NAC or your local rental house depending on your requirement.

Sales:

- Ikegami Tsushinko Co., Ltd, Japan - abe-to@ikegami.co.jp
- Ikegami Electronics GmbH, for Europe, Middle East & Africa - broadcast@ikegami.de
- Ikegami Ltd, for the UK & Ireland - info@ikegami.co.uk
- Ikegami Electronics Inc, for the Americas - info@ikegami.com

Information:

- <http://www.nacinc.com/applications/entertainment/>
- http://www.nacinc.com/products/hd-ultra-slow-motion-cameras/Hi-Motion_II/