

Phantom Operator Certification Training – Level I

COURSE DESCRIPTION

The Level 1 certification course has been designed to provide a basic understanding of what a high speed digital camera is comprised of, how it works, and how to use it to capture, review, edit and save Cine recordings in their simplest form for operators who have little or no experience in digital high-speed imaging. This course will elaborate on the many decisions the operator should consider prior to recording an event: lighting, lenses, memory, and storage just to name a few. It will provide the student with the general knowledge.

WHO SHOULD ATTEND

Operators who have little or no experience in recording high speed events, and technicians required to install, the Phantom cameras and their peripherals.

COURSE BENEFITS

Upon completion of the both Level I and II Phantom Operator Certification courses, the student will:

- Be recognized as a Factory Authorized and trained Phantom Technician and added to the Vision Research Global List of available Phantom technicians supporting Phantom cameras
- Receive a 25% discount on future / advanced training sessions
- Receive one-time access to a Rental camera at 75% off of a one-week rental within 60 days of successfully completing the certification training
- Gain access to:
 - Online User Group
 - Rental Technical Support opportunities within your region
 - Refurbished and rental camera Discount Program providing:
 - Up to 40% off rentals (Standard and Premier Level discounts (35% / 50%) (differentiated by frequency of rentals)
 - Up to 35% of Refurbished Phantom cameras (Standard – 25%, Premier Level 35%)

PREREQUISITE

- Photography principles knowledge and practical experience
- Microsoft Windows utilization and file manipulation

REQUIRED COURSE MATERIALS

Textbook – Vision Research will supply each student with a copy of the Phantom Operator Certification Training Level 1 Student Manual.

Supplies – The latest revision of PCC (Phantom Camera Control) software will be supplied to you by Vision Research for installation onto your laptop during class.

Technology – You will need a laptop computer with one of the following Operating Systems installed; Microsoft Windows 7 (32 or 64 Bit); Microsoft Windows 8.1 (32 or 64 Bit); Microsoft Windows 10 (32 or 64 Bit). The laptop must have Administrative Privileges enabled.

COURSE STRUCTURE

Lecture:65 %: Exercise Work: 35%

STUDENT LEARNING OUTCOMES

This course is intended to improve the students' knowledge and skills to gain and demonstrate proficiency in high-speed imaging. Only an earnest effort and hours of practice outside of the classroom can bring about significant improvement. After completing this course the student will be able to:

1. Describe the benefits of digital high-speed imaging versus traditional photography / videography.
2. Describe the key components of a digital high-speed camera, the signal flow, along with lens selection and lighting techniques affect image quality.
3. Demonstrate knowledge, basic skills, best practices, and concepts related to the technology and techniques to record, edit, and save critical events for analysis.
4. Explain the differences' various Phantom cameras models utilize to input / output signals.
5. Demonstrate knowledge and skill to access important camera and Cine-related information.
6. Demonstrate knowledge, skills to produce quality footage, in recognizable file formats, to others (i.e. analyst, customer, etc.).
7. Demonstrate ability, conceptual understanding to restore a Phantom camera back to factory calibration settings, upgrade camera firmware, and assign a secondary IP address to a camera.

COURSE SCHEDULE

During this one-day course, the time allocated to each module is flexible within a short time range (typically 10 to 30 minutes). When deciding on the duration of modules, consideration will be given to:

- the time required to achieve outcomes
- the level to which outcomes will be achieved
- the extent to which content in modules will be explored

Estimated Time Module / Lesson

(8:30 – 9:00)	Welcome Introductions, and Registration
(9:00 – 10:00)	Module 2 Introduction to High Speed Imaging Benefits of High-speed Imaging vs Traditional Photography / Videography Application Domains Workflow Key Components of a High-speed Digital Camera The Image Sensor Sensor Type Sensitivity Sensor Format Sensor Resolution Color vs. Monochrome

- The Digital Processing Components
 - Optics
 - Lighting
 - Other Things to Consider
- (10:00 – 11:00) Module 3 | Lensing and Optics Basics
- Glossary of Terms
 - Depth of Field
 - Focal Length
 - Flange Focal Distance
 - Lens Mount
 - Sensor Format / Size
 - Field of View / Angle of View
 - Aperture / Iris / Diaphragm / f-stop
 - Shutter Speed / Exposure Time
 - How Optics Affect Imaging
 - The Modern Compound Lens
 - On Choosing Lenses
- (11:00 – 12:00) Module 4 | Lighting Basics
- Glossary of Terms
 - Color Temperature
 - White Balance
 - Flicker
 - Color Rendering Index
 - Spectral Power Distribution
 - Things to Consider
 - Subject
 - Environment
 - Hardware
 - Illumination Techniques
 - Three-Point Lighting
 - Axial / Axis Lighting
 - Side & Top Lighting
 - Shadowgraph Lighting Methods
 - Schlieren Lighting
 - Various Light Source Characteristics
- (12:00 – 1:00) Lunch
- (1:00 – 1:10) Module 5 | Introduction to PCC
- Pre-Installation
 - Shot Considerations
 - The User Interface
 - Selecting a Camera for Use
- (1:10 – 1:30) Module 6 | Defining the Application Preferences
- General Preferences
 - Measurement Preferences

	Logging
	Camera Preferences
(1:30 – 2:45)	Module 7 Exercise 1: Recording / Capturing an Event Basics
	Camera Settings
	Cine Settings
	Key Advanced Settings
	Key Camera Signals
	Record the Event
	Review the Recorded Event
	Edit the Recorded Event
	Quick Search Techniques
	Save the Recorded Event
	Adding Border Data
(2:45 – 3:00)	Module 8 Exercise 2: EDR Exposure Time
(3:00 – 3:30)	Module 9 Exercise 3: More Advanced Settings and Camera Signals
	Other Advance Settings Options
	Start / End of Recording Actions
	Temperature
	Time Info Out Pin Format
	Audio
	Other Camera Signals
	Pretrigger Pin Is:
	Ready Signal Ends At:
	Dedicated vs. Assignable vs. Programmable Signals
(3:30 – 3:40)	Module 10 Exercise 4: Other Camera Settings
	Focus Target Using Lens Control
	Backup & Restore Settings
(3:40 – 3:50)	Module 11 Exercise 5: Accessing Useful Camera / Cine Information
(3:50 – 4:05)	Module 12 Exercise 6: Post Processing - Image Tools
(4:05 – 4:20)	Module 13 Exercises 7 - 8: Post Processing - Converting Cine Files
(4:20 – 4:30)	Module 14 Exercise 9: Post Processing - Batch Conversion
(4:30 – 5:00)	Module 15 Camera Repair & Upgrade Application
	Restore Settings
	Upload Files
	Assign a Secondary IP Address
	Restore Camera ID
	Format Flash Memory Format

EVALUATION / GRADING:

The following categories will be utilized in the program evaluation methodology.

Reaction (learner satisfaction) – The response of the learners after finishing with the course is a measurable action. Success is achieved when most of the audience responds positively to the course.

Learning (testing and competence) –In addition to the success on the workshop assignments all of the practices and assessments included in the course will serve to measure learning.

Behavior (on-the-job application) –Learners apply the skills and knowledge they learn in the course by exercising best digital photography practices and maintaining / troubleshooting the product line as needed.

Results (business impact) –The learner’s skills and knowledge in digital photography results in the increased number of successful projects in which the VRI Phantom product line is involved.