



What is a Hologram ?

A classical hologram is a quantitative, dense record of an entire observable object (historically collected on a film plate). This optical record is formed instantly by the interference between two laser light beams of a single wavelength, one reflected from the object and the other used as a reference wave. The interference pattern of the light beams allows the 3-dimensional (3-D) shape of the object to be created, with depth resolution finer than the laser light's wavelength. Depth range and object surface texture impact the actual resolution.

What is a *Shapix Surface Detective*TM

Digital Hologram ?

A ShapixTM Digital Hologram is recorded on a digital camera (not a film plate). Using several wavelengths of laser illumination, the ShapixTM Digital Hologram integrates multiple classical holograms into an entire observable object record which quantitatively covers an optical 3-D depth range and tolerance of surface characteristics far beyond those measurable with a single classical hologram while still equaling or exceeding the fine depth resolution achievable with a single wavelength hologram for the same surface type.

Note: Holography (from the Greek, ὅλος-holos - whole + γραφή-graphé - writing) is the technology of producing holograms. Holography was mathematically conceived in the 1950's. It was first practically demonstrated in an Ann Arbor, MI laboratory in the 60's. Component technologies enabling the *Shapix Surface Detective* Digital Hologram technology became affordable in the late 1990's. Prototypes were delivered to industry starting in 2000. Major productization and extensions followed, vastly improving the measurement range, accuracy, speed, measurement types and plant floor readiness.