



Technical Proposal for V-Notch Measurement System

To,
M/s

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1. Technical Description – Machine Vision Systems

Machine vision has evolved to become a fast and reliable tool for quality control inspection. It is now becoming a fast and reliable tool for quality control inspection. As initiatives such as Six Sigma and TQM push quality standards to the highest levels, machine vision can aid manufacturing organizations in reaching their quality goals. It is deployed to do things more quickly and accurately than humans and at a lower cost.

Machine vision is a specific application of computer vision that enables cameras and computers to replace humans in evaluation and inspection tasks that are precise, repetitive or high speed. Today, more than ever, machine vision is being used to ensure quality in manufacturing everything from diapers to the most advanced computer chips.

1.1.How it works

A machine vision system acquires images of an object and then uses computers to process, analyze and measure various characteristics of that object so decisions can be made. These decisions may involve characteristics that cannot be seen by the human eye or analyzing image data for measurement purposes. Qualifying parts as "good" or "bad" based on their shape or size is the cornerstone of quality inspection systems. In addition, products built in stages can benefit from inspection throughout the process. Because each production stage has a cost per unit associated with it, eliminating bad parts early in the process can save money and improve efficiency. To maximize the effectiveness of machine vision, consider various ways to help the system to see possible problems, for example, by mechanically positioning the part under inspection, and using lighting and optics that clearly show the defects. Specific systems can be customized to a particular industry, or company's needs, but the basics are the same.



2. Technical Data – OPTON-60-VNotch

2.1. Machine Specifications

2.1.1. Measurement Parameters

Opton-60-VNotch is special purpose machine for V-Notch measurement as per ASTM standard “ASTM E23”. The detailed measurement parameters are as follows:

V-Notch Parameters		
Parameter Name	Required Values	Measurement Tolerance of system
Specimen Length	55 mm (+0, -2.5 mm)	0.04 mm
Specimen Width	10 mm (+/-0.075 mm)	0.04 mm
V-Notch Position	27.5 mm (+/-1 mm)	0.04 mm
Specimen Thickness	10 mm (+/-0.075 mm)	0.04 mm
V-Notch Angle	45 deg (+/-1 deg)	0.2 deg
V-Notch Radius	0.25 mm (+/-0.025 mm)	0.005 mm
V-Notch Depth	2 mm (+/-0.025 mm)	0.005 mm
V-Notch Depth below	8 mm (+/-0.025 mm)	0.005 mm

2.1.2. Optics

The Opton-60-VNotch consists of high resolution camera with dual magnification. The magnification is changeable very easily with a knob.

The two magnifications are 3x and 20x.

With 3x magnification, we can measure

- Total Length
- Width
- V-Notch Position
- Thickness

With 20x magnification, we can measure

- V-Notch Angle
- V-Notch Radius
- V-Notch Depth
- V-Notch Depth below.



2.1.3. Measurement Time

As mentioned above, there are 2 magnifications in the machine. By changing the knob, this magnification can be changed. Also, to measure the Width and the Thickness the component needs to be rotated by 90 degrees.

Thus, there 3 measurement sets as described below:

Set Number	Component Position	Knob Position	Measurement Parameters
1	V-Notch visible on screen	Magnification 1 (10 X)	Specimen Length Specimen Width V-Notch Position
2	V-Notch visible on screen	Magnification 2 (90 X)	V-Notch Angle V-Notch Radius V-Notch Depth V-Notch Depth below
3	V-Notch not visible on screen (90 degree rotated component at same position)	Magnification 1 (10 X)	Specimen Thickness

Each of the above measurement set will take 2 seconds to measure the dimensions after button click.

2.1.4. Overall Specifications

The overall specifications for OPTON-60-VNotch are as follows:

Specifications	
Model	OPTON-60
Camera	CMOS, Sony 2/3" chip
Lens	Dual magnification (10X and 90X)
Field of view *	60 x 45 mm
Illumination	Back Light Illumination - LED Ring array (White / Green Light)
Measurement Tolerance	Mentioned above for different sets
Operating ambient temperature	10 - 60 deg C
Operating ambient humidity	20% to 60% RH (no condensation)
Power Supply	220 VAC, 50 Hz (Single phase)
Weight *	Approx 25 kg
Dimensions *	350 x 350 x 970 mm

* Specification may change in future.



Note: PC is not considered in the scope of supply.

The specifications of the PC should be as mentioned below:

Intel Core 2duo processor, 1.6 GHZ, Windows XP / 7 OS (32/64 bit), 2 GB RAM, free USB2.0 port (minimum 1)