

"Your monitoring specialist"
certified ISO 9001 + ISO 14001



Crimping Line

Crimp Vision Monitor CVM-3

In-line camera inspection system for crimped terminals on automatic lead maker



The number of critical circuits in today's cars is increasing as more sophisticated safety systems are being employed. The number of critical circuits in autonomous cars to support added cameras and sensors is far greater than today's cars. The reliability of the wiring systems required to support these new technologies has to be guaranteed. Today most crimps are inspected indirectly by Crimp Force Monitors (CFM's) and visually by crimping equipment operators.

Crimp cameras are another tool that can be employed to further eliminate crimp defects from wire harnesses. Crimp cameras are retrofitted to existing automatic crimping machines to realize 100% in-line inspection of crimps. Defects that are difficult for traditional Crimp Force Monitors to detect are easily detected by crimp cameras. Some of these defects include strands pressed on top of the crimp, insulation crimp wing defects, small movements of the insulation position in the "window", single wire strand sticking out either side of the crimp, long brush, seal placement, etc.

Additionally wire stripping can be checked as the wire moves past the camera on the way to the crimp press. Strip length, insulation diameter, copper diameter, wire splay all can be checked. Seals can also be checked for correct position, orientation, and size.

Performance features

- In-line inspection with 0.3 Mega pixel colour cameras
- Wire sizes from 0.1 to 6.0mm² (AWG 26 - 10)
- Inspection on the fly at wire speed (arm speeds) up to 2.5 m/sec. It's not necessary to stop the wire for checking.
- Adaptable to many automatic crimping machines
- One or two camera configurations
- With or without strip check function (depending on make and model of cutting machine)
- Calibrated dimensional checks of strip length, insulation diameter and copper diameter
- LED ring flash from above for colour crimp control images
- Special LED flash from below for black and white strip control images



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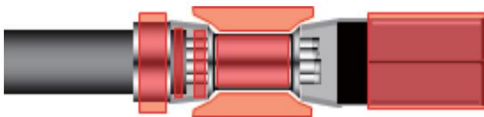
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Crimping Line

More performance features

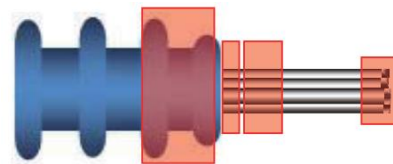
- ⊗ Stop signal for the cutting machine when defects are detected, or automatically cutting defects. Output signals in less than 100 ms after picture taking.
- ⊗ User friendly crimp inspection software, designed especially for the crimping process
- ⊗ The intelligent detection system can compensate for positional deviations of the sample and perform the measurements

Checking points



Crimped terminals

- ✓ Insulation barrel deformation (bent inside or outside, etc.)
- ✓ Wire barrel deformation (strands out extremely, overlapping strands, etc.)
- ✓ High insulation, low conductor
- ✓ Others (cable colour, dimensions etc.)



Stripped wires and inserted seals

- ✓ Stripped length
- ✓ Wire overlap
- ✓ End-open
- ✓ Seals insert errors (reversed insert, seal position...)



Specifications

- | | |
|--------------------------------|---|
| ⊗ Wire size | 0.1 – 6.0mm ² (AWG 26 - 10) |
| ⊗ Wire speed at camera shutter | 2.5m/sec |
| ⊗ Shutter speed | max 1/60,000 second (0.0017ms) |
| ⊗ Number of cameras | up to 2 cameras |
| ⊗ Camera CCD resolution | 0.3 Mega pixel (colour) |
| ⊗ Judgment speed | 40 – 100 ms (shutter trigger to result output) |
| ⊗ Items that can be registered | Unlimited (depending on hard disc capacity of the PC) |
| ⊗ LED output limitation | Upper and lower lights cannot be lightened simultaneously |
| ⊗ LED flash interval | > 100 ms |
| ⊗ LED flash duration | < 2 ms |
| ⊗ LED current | 300mA to 12 A, variable |
| ⊗ Voltage supply | 100 – 240 VAC |
| ⊗ Dimensions (W x D x H) | 320 x 67 x 272 mm |
| ⊗ Weight | Approx. 2 kg |