LPA58

1. Overview

WireScan 3
Model LPA58™
User's Manual

Patents: US 6,496,271 B1
   US 6,885,463 B2
             US 7,719,695 B2

1. Product

Image/drawing	Description	Part Number
	• Controller only	• **LPA58-CON**
	• Universal Mounting bracket	• **AU510A** • **Others available upon request**
	• Standard options cable	• **L58-SOC485**
	• Standard Interface cable	• **L58-SIC**
	• Software supplied in USB Stick	• **LB080A**

2. Installation

a. Software :

1- Install Wirescan from supplied USB stick or website downloads
   http://www.oestechnologies.com/downloads/

2- Go to LPA Device tab and then Add Device
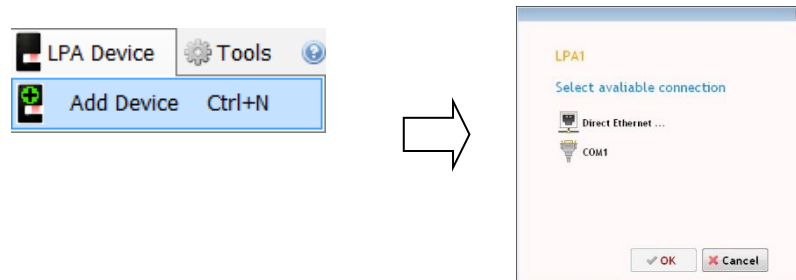
3- Click on the device and press OK to open the communication port. An Icon will appear at the top of the screen to confirm the LPA has been added.

   WireScan 3 will manage multiple LPA's. Click on the LPA icon to select the unit for monitoring. Once the LPA58 communication is established, the port will remain open unless manually closed.
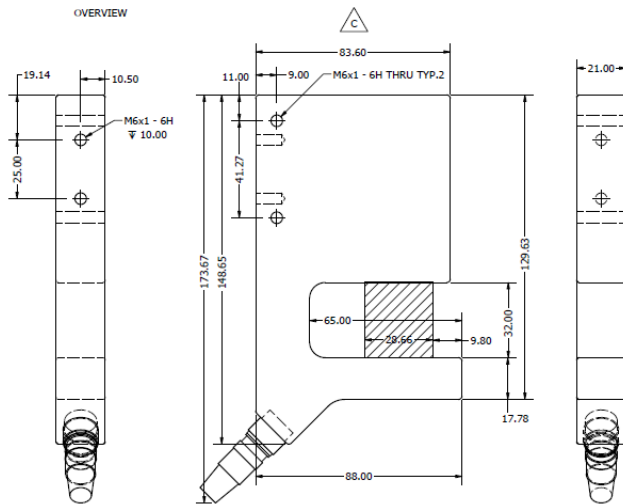
4- To remove a device select the LPA device at the top of the screen, select LPA Setup and click "Remove Device".
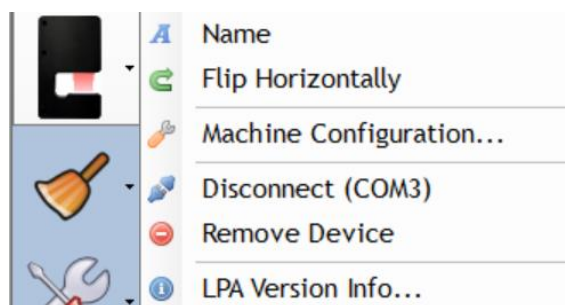
5- To disconnect and reconnect the serial communication select LPA Setup and click connect or disconnect.

b. Mechanical

i. LPA outer drawing dimensions

ii. Bolt size and thread required

Bolt size is M6X1 – 6 H through Typ. 2

iii. LPA should be in line with Arm and Wire position within the 28 mm sensing window

- The wire end may need pass within the LPA58 sensing window depending on the selected inspection mode.

- Machine timing – the LPA58 should be mounted at a location that ensures the inspection will occur early enough in the process for the LPA58 to provide an output in time to achieve the desired machine control.

- The Sensor Head should be positioned so there is no possibility of physical contact with the wire or the conveyor parts of the machine as the wire is transferred through the window and swung back through the sensor with terminal. Manually moving the arm through its trajectory to confirm that no crashes will occur.

- Wire should pass through the window as close to parallel with the sensing element as possible.

c. **Electrical**

The LPA58 connections to the wire processing machine are as follows:

- 24VDC supply power.
- I/O for machine for control of defects.
- RS485 serial cable connection to the machine PC.

LPA58 is supplied with a 1.8 meter length electrical interface "L58-SOC485" cable with two connectors – I/O cable connector.

An I/O "SIC" cable extends the machine interface cable, which is routed and connected to the machine 24VDC supply and control I/O.
An RS485 serial extension cable is routed to the machine PC and connected to an RS485 serial port.

Machine specific connections and the inputs and outputs configurations
Machine specific interface cables are also available.
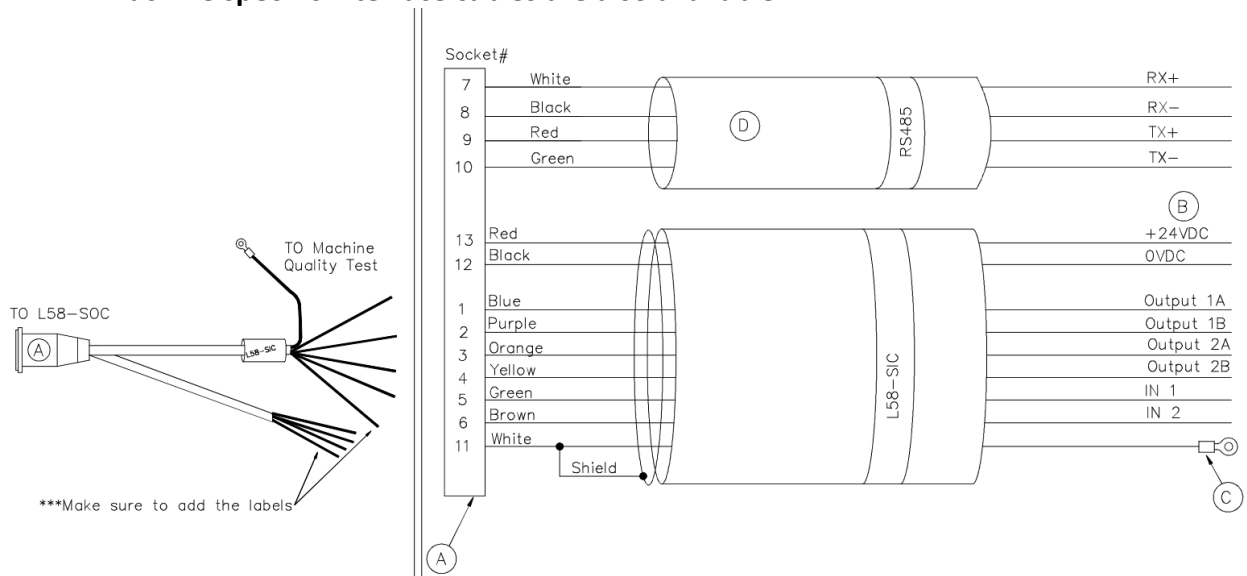
3. Setup

a. Inspection modes

For different parts, the LPA58 inspection parameters could be reviewed and re-configured as required. For example, setup change from wire strip inspection to wire Strip and Seal inspection or tolerance settings.
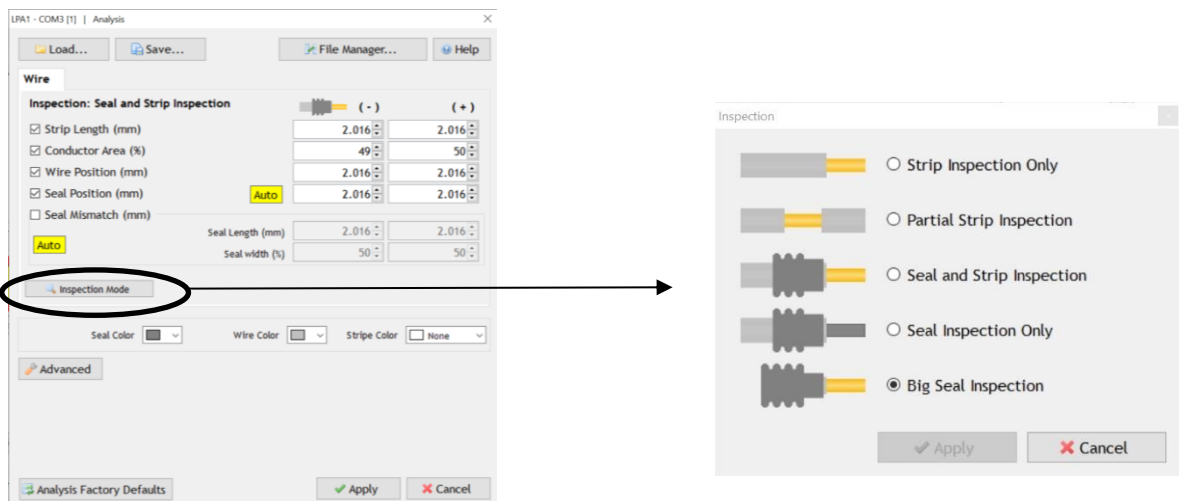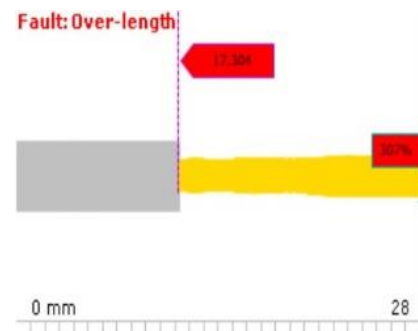
1. **Strip Inspection Only**

Strip inspection only is used to inspect strips of up to 24 mm long (the maximum length may vary depending on the machine type) when no seal is being applied.

The part can be inspected for Strip Length, Conductor Area and Wire Position to detect possible quality failures with long/short strip, pulled strands, splayed strands, multiple cut strands.
For Strip inspection only the wire should be presented displaying at least 2 mm of insulation and with the wire end not exceeding the end of the inspection window.

<u>Wire End Presentation</u> : When the end of the wire exceeds the inspection window, the LPA58 will display an "Over-length" error message.

2. **Seal Inspection Only**

Seal inspection only is used to inspect seals of up to 24 mm long (the maximum length may vary depending on the machine type) when no strip quality test is required**.**

The part can be inspected for Seal Position, Seal Width and Seal Length to detect possible quality failures with seal position variation, skewed/pierce seal, seal orientation and seal variations (mismatch).

3. **Seal and Strip Inspection**

Seal and Strip inspection is used in applications were the strip length and seal length combinations are less than 24 mm **(the maximum length may vary depending on the machine type).**

The part can be inspected for Seal Position, Seal Width, Seal Length, Strip Length, Conductor Area and Wire Position to detect possible quality failures with seal position variation, skewed/pierce seal, seal orientation and seal variations (mismatch), long/short strip, pulled strands, splayed strands, multiple cut strands.

4. Big Seal Inspection

Big seal mode is used in applications were the strip length and seal length combination exceed 24 mm (the maximum length may vary depending on the   machine type) or where the back of the seal is not visible to the LPA58.
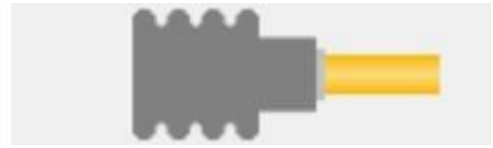
The part can be inspected for Seal Position, Seal Width, Strip Length, and Wire Position to detect possible quality failures with seal position variation, skewed/pierce seal, seal orientation and seal variations (mismatch), long/short strip, pulled strands, splayed strands, multiple cut strands.

For big seal inspection, the wire should be presented displaying at least two ribs of the seal and the wire end not exceeding the end of the inspection window.
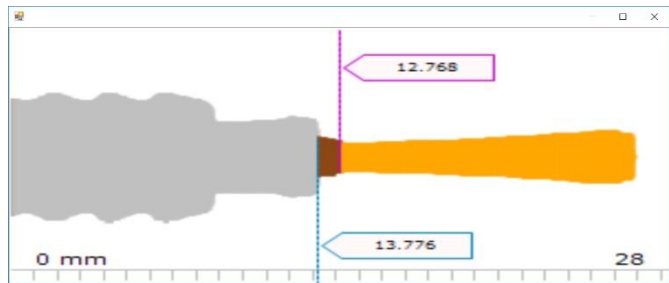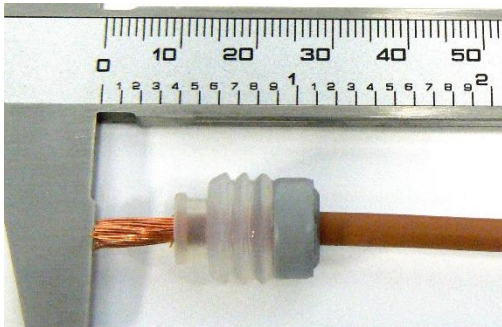
5. Partial Strip Inspection

Partial Strip Inspection is used to inspect partial strips when the slug is left attached to the wire.

The part can be inspected for Insulation shoulder position, slug length, strip length (distance between insulation shoulder and slug) and conductor diameter to detect possible quality failures with long/short strip, slug too attached to the insulation and multiple cut strands.

For partial strip inspection, the wire should be presented displaying at least 2 mm of insulation and with the wire end not exceeding the end of the inspection window.

For long strip applications, where the insulation shoulder is not visible, then Strip start position will always be 0, Conductor area should be disabled and the strip length (conductor window) is measured from pixel 0.
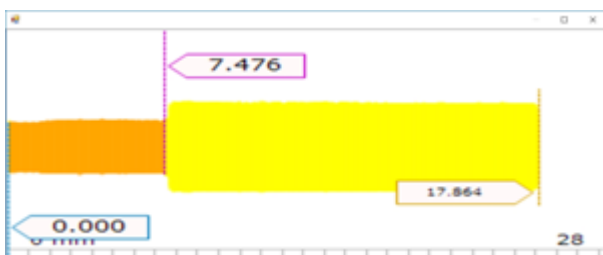
b. Enable/Disable Parameters

Inputs are configurable to enable/disable the LPA58 inspection relative the machine function and timing.

Firing Pulse - Enables the LPA58 inspection during the transfer of the wire sample through the inspection window. It is useful for machines with swing back function to only analyze the correct direction.

Learn – Enables the LPA58 to learn a new setup by setting the unit in Learn mode.

Disabled – Allows the LPA58 to analyse anything that passes through the sensing window.

6. Production

a. Learn Function

- From the main menu select the LEARN icon.
- Select the LPA to set into learn mode or "Learn All LPA's" when more than one LPA is installed on the machine.
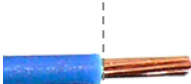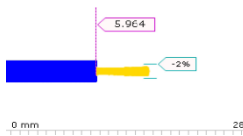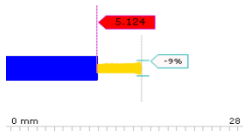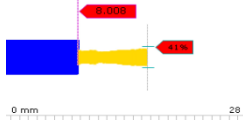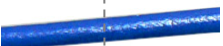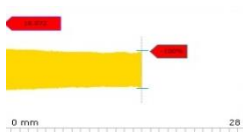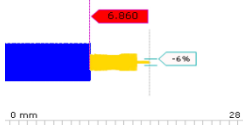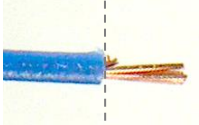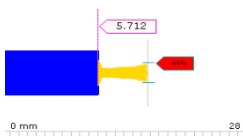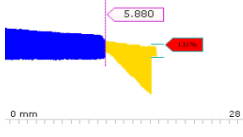
The LPA performs a learn with at least one sample, which automatically sets the targets and tolerances from the pre-configured SETUP parameters. The LPA58 reverts to production mode automatically. In production mode, the LPA58 inspects every wire produced relative to the characteristics of the learned wire for determination of PASS or FAIL.

Note a "Fail Learn" will occur if the LPA58 cannot detect the insulation or seal within the configured maximum samples. Fail Learn may also occur if the wire extends over the end of the sensing window of the LPA58 (See Inspection modes).
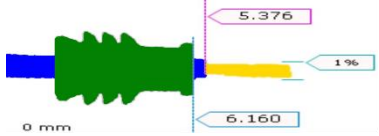
b. Pass/Fail Decision
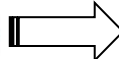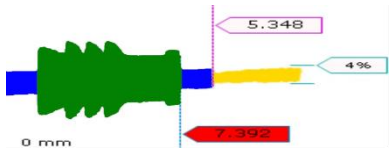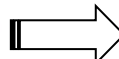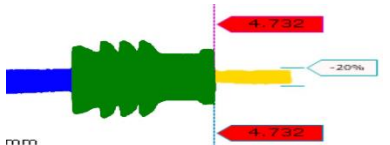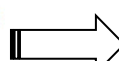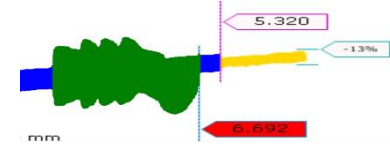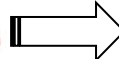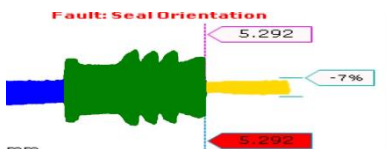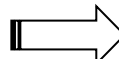
Wire Strip Inspection

Wire Strip Sample			LPA58 Image Capture	
PASS!		⇒		🙂
HIGH INSULATION or SHORT STRIP		⇒		🙁
LOW INSULATION or LONG STRIP		⇒		🙁
NO STRIP		⇒		🙁
PULLED STRAND		⇒		🙁
CUT STRANDS		⇒		🙁
SPLAYED STRANDS		⇒		🙁

Seal Insertion Inspection

Wire and Seal Sample		LPA58 Image Capture	
PASS!		5.376 / 1% / 0 mm / 6.160	🙂
LOW SEAL POSITION		5.348 / 4% / 0 mm / 7.392	🙁
HIGH SEAL POSTION		4.732 / -20% / mm / 4.732	🙁
SKEWED SEAL		5.320 / -13% / mm / 6.692	🙁
REVERSED SEAL		Fault: Seal Orientation / 5.292 / -7% / mm / 5.292	🙁
NO SEAL		Fault: Seal Not Found / 5.348 / -11% / 0 mm / 0.000	🙁

If you have any questions or concerns please contact OES Technologies.

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