



Conformance testing ensures clear open communications

Open control and automation networks, upon which devices from many vendors can be used, are increasingly preferred throughout most industrial sectors. John Browett, General Manager of the CLPA Europe explains the role and importance of conformance testing.

The benefit of using networks that are built to open standards is that it removes the constraint of having to buy equipment from a single supplier. Instead products can be purchased from many sources, confident that they will 'plug and play', communicating and working with everything else on the network because it has all been built and tested to the same standard.

Conformance testing and certification is an unequivocal verification that devices meet a set of standard-specified requirements and will be fully interoperable with all other devices tested and used on the same network.

Today few if any customers are prepared to accept unproven assurances from suppliers that their products meet a specific open standard. Instead most demand performance guarantees that devices and systems will work together seamlessly.

Conformance testing plays a crucial part in ensuring that end-user expectations are met and ensures that all devices will be fully interoperable.

There are various aspects to the testing, including assessment for performance, robustness, behaviour and interoperability. However, it is not a means to measure the performance of one item against another, rather a guarantee of suitability.

Interoperability v conformance

Conformity and interoperability are both integral and fundamental approaches to the testing of standardised protocol implementations. However, one does not replace the need for the other.

Conformance testing determines to what extent a single device or product complies with all the individual requirements of the network standard.

Interoperability testing analyses the ability of all system devices to operate together and determines if the end-to-end functionality between communicating products meets the requirements of the relevant network standard. It does not always prove that individual devices conform to the detailed requirements of the protocol implementation.

Thus the two approaches are complementary and not mutually exclusive. In fact, in complex technologies, the potential cost of getting things wrong, alongside a renewed interest in branding certification programmes, encourage a combined approach.

Testing

Some manufacturers conduct tests on their own products to meet specifications and demonstrate conformance to the standards they claim to meet. Others prefer third-party organisations to undertake the tests and to verify that they have been carried out properly.

Many conformance standards are set by organisations such as the CC-Link Partner Association (CLPA). Testing that is carried out by a standard-setting organisation provides suppliers and users with the greatest assurance of compliance and the compatibility of new products with other devices on the network.



CC-Link testing includes:

- Inducing noise into the equipment and cabling, together with a floating capacitance measurement test.
- Hardware component verification and performance tests.
- Software buffer memory tests, master slave communication handshake tests, automatic station return verification tests and a baud rate switch out-of-range test.
- Cable length, interoperability, interchangeability, profile and 12 hour running tests.

The aim is to ensure three main areas: connectability, noise immunity and ageing, the critical parameters for a successful network. These tests are carried out at one of a number of CLPA test centres around the world, the European one being in Dusseldorf, Germany.

With its stringent conformance testing of compatible products, CC-Link ensures problem free connectivity and network operation.

The benefits of achieving an open network standard certification include: conformity of a wide selection of devices from different suppliers; device interoperability; error reduction; productivity gains; flexibility in device selection; the security of multiple sources of supply; quality assurance; risk reduction; increased reliability and an independent 'seal of approval'.

In short: peace of mind!

In conclusion we can say that end-users and OEMs are increasingly drawn to the benefits of using open multiple device networks. However, they seek the reassurance of knowing that all the network devices 'talk the same language' and can therefore help raise efficiency and productivity levels on the shop floor.

Together with suppliers and vendors, they understand the critical role that conformance tests play in making sure that devices and systems comply with network specifications and verified standards.

This trend looks set to continue as companies' expectations rise on quality assurance, fewer errors, increased product interoperability, greater flexibility and the 'peace of mind' confidence that all come from open network conformance testing.

About the CLPA

The CC-Link Partner Association (CLPA) is an international organisation with over 2,100 member companies worldwide. The partners' common objective is promotion and technical development of the family of CC-Link open network technologies. Over 1,300 certified products are now available from over 280 manufacturers. CC-Link is the leading open industrial automation network technology in Asia and is becoming increasingly popular in Europe and the Americas. The European headquarters is in Germany, with offices throughout the continent. The key details for CLPA's Gateway to Asia (G2A) can be found at the URL www.cc-link-g2a.com.

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