

## WHITE PAPER

### PREMISES CABLING SYSTEM WARRANTIES

It is not uncommon for customers or their consultants to request that installed cabling be covered by some form of suppliers' warranty. What is becoming increasingly apparent is that many of the warranties being provided are not effective in any substantive way - a fact that becomes all too obvious when they are challenged but by which time is too late!

This White Paper has been created to allow warranties (also termed guarantees) to be assessed in advance of their acceptance. It is applicable to optical fibre, high performance balanced and voice cabling.

#### **Types of warranties: component, link or channel**

One of the most important aspects to be clarified when a warranty is either sought or offered is what it covers. It may be simply a component warranty that addresses failure to function or perform at the specified level. There is little to be said about such warranties since they are generally part of the normal terms and conditions of supply and are subject to the legal small print that surrounds any supply contract. However, care should be taken to ensure that there are no hidden conditions of warranty - such as any requirement that the components shall have been installed by an "approved installer".

The more complex warranties apply to cabling in its installed state. The simpler of the two options is the "link warranty" that covers the performance of the terminated installed cabling. A more complex warranty is often described as a "channel warranty". These warranties take their names from the use of the terms "link" and "channel" in the structured cabling standards. Unfortunately, other terms are sometimes used and if these are encountered it is recommended to compare the scope of such terms with the following definitions.

**Link:** typically the permanent link for cabling in accordance with ISO/IEC 11801, EN 50173-2:2007 and ANSI/TIA/EIA-568-B standards - also applied to the permanent links defined in other standards or the sub-parts of permanent links such as the CP link.

**Channel:** for cabling in accordance with ISO/IEC 11801, EN 50173-2:2007 and ANSI/TIA/EIA-568-B standards - also be applied to the channels defined in other standards.

It is immediately noticeable that the channel (physical) contains the cords and therefore is the entire transmission path between any two pieces of equipment connected to the cabling whereas the link (physical) only includes the fixed cabling.

A link warranty (e.g. the link will meet Class D of EN 50173-1:2007 or Category 6 of ANSI/TIA/EIA-568-B.1) for 25 years is little more than a component warranty combined with some installation requirements. A link warranty typically guarantees the performance of the installed cabling when measured using specific test equipment but places few other demands upon the customer in terms of the channel that are ultimately created.

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A channel warranty will generally guarantee the cabling performance “seen” by the transmission system but will place requirements on the customer for the procurement and use of the cords and any other components that create the channel. A channel warranty may be defined in terms of transmission performance (e.g. the channel will meet Class D of EN 50173-1:2007 or Category 6 of ANSI/TIA/EIA-568-B.1) or it may be a warranty of support for specific applications in terms of maximum channel length or some related parameter.

The reason for highlighting this differentiation is that the conditions of the two types of warranties differ significantly and also because customers or their consultants often ask for “end-to-end” warranties without being clear about their intent i.e. do they mean “end-to-end” of the installed cabling or “end-to-end” of the channel.

#### **Warranty conditions**

The previous section showed that it is important to be clear what is warranted. Equally important is the need to be clear about the conditions under which the warranty applies.

Channel warranties generally require the ongoing commitment of the customer to procure the correct cords and other channel creation components. Link and component warranties are generally more relaxed in terms of long term customer demands.

However, all warranties may require that the installation has been undertaken by “approved installers”, suitably certified by the warrantor and authorised to award the warranty. This is the point at which some investigation of the warranty scheme can produce benefits.

#### **Upon what basis is the warranty awarded?**

The award mechanism deserves some scrutiny since it can provide some level of confidence in the warranty that is awarded i.e. if the supplier takes the award seriously then it may be worth having.

Is the installation actually inspected by the warrantor or is the award made simply based on documentary evidence provided by the installer? If the latter, is there a comprehensive list of quality assurance requirements against which the installation is assessed or does the documentation simply take the form of test results?

Obviously, some type of quality assurance checklist is preferred and its contents should comprise supplier specific requirements together with the requirements of the relevant installation standards (e.g. BS 6701, the national publications of EN 50174-1, -2 and -3 etc.). In an ideal world the checklist could be signed off both by the installer and the customer before submission to the warrantor. However, this is rarely required.

Even if a checklist is not used, most warrantors will have a list of installation requirements that form the basis for installer approval. These requirements should be checked for compliance to the standards listed above.

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With regard to test results, it should be highlighted that, despite valiant efforts in the field of standardisation, the test results obtained remain test equipment specific i.e. the results obtained are only truly repeatable when using the same test system (including cords). Therefore, if transmission performance disputes arise the customer should ensure that the “specified test system” of the warrantor will be that to which reference will be made.

#### **Upon what basis are installers “approved”?**

There is no shortage of installers wanting to be “approved” by cabling component or system suppliers. There are normally two aspects that form the basis of an approval system. One is commercial, the other technical.

#### **Supply chain management**

Commercially, one of the most relevant criteria by which to judge the value of a warranty is the way in which the warranting supplier manages their approved installers. If a supplier takes the business of installer approval seriously, the number of approved installers will be limited to a quantity that can be “managed” effectively by those in charge of the warranty system.

Effective management of a supply chain includes random inspections, sample audits, technical and commercial meetings, maintenance of training regimes etc. There is no single correct ratio of approved installers to supply chain managers since each supply chain system and cabling technology is different—but a potential client should not be impressed by a supplier that has hundreds of approved installers managed by a single “supply chain manager”. In such a situation, there is clearly no way that any effective quality assurance can be applied to the installations for which warranties are sought.

Clearly, an under-resourced supply chain system cannot provide any effective quality assurance, independent of how “good” the installers are, and simply pays lip-service to the concept of warranted solutions.

#### **Approved installer training**

Technically, any warranty for installations, be it component-, link- or channel-based, will require the products to be installed correctly. There are two aspects to this - one relates to the use of the correct tools and methods of installation required by the warrantor for their components. The other will be conformance to recognised standards. The first requires the warrantor to provide some type of training, however limited. The second may require either specific training or be based upon assessment of pre existing knowledge.

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There are basically three approaches to approved installer training:

- ⇒ • each person working on an installation has to have been trained and/or assessed by the warrantor;
- ⇒ • each installation has a project manager/supervisor that has been trained and/or assessed by the warrantor, making that project manager/supervisor responsible for the work of other operatives on that installation;
- ⇒ each approved installer organisation has one or more persons that have been trained and/or assessed by the warrantor, making them responsible for all work undertaken.

The value of a warranty can be judged on the requirements placed on the approved installer to undertake this training or assessment.

#### **The impact of EN 50173-X:2007**

In 2004, a major revision to BS 6701 was published. This defines specific requirements and responsibilities for premises owners and installers in relation to the installation, operation and maintenance of telecommunications cabling. It makes normative (i.e. mandatory) the requirements of BS EN 50174-1, -2 and -3. As such, BS 6701 is effectively a “one-stop-shop” reference for the installation of telecommunications cabling and should be the basis of cabling component/system warranties.

In 2007, BS EN 50173-2, -3 -4 and -5 are to be published. These are structured cabling design standards for office premises, industrial premises, homes and data centres respectively. These also make normative the application of the EN 50174-1, -2 and -3 standards for installation.

This linkage shown in Figure 3 is having a number of important effects. One of these effects is that many well known system suppliers, who for years have taken little interest in installation standards (because they have had their own) are now very keen to ensure that what the installation standards require or recommend actually matches their internal procedures (or vice versa). This is great news for the future of installation standard compliance at the high-end of the market and will inevitably have a trickle-down effect.

Another effect of the linkage is the re-focussing of the meaning of “installer competence” i.e. unless installers qualifications are based on the relevant British (or European) standards they are of no obvious benefit under contract. This reinforces the importance of knowledge of national regulations in support of the standards.

With the publication of the new European cabling design standards, the justification of warranties is once more under the spotlight. Put simply the question is this - if a tender document demands conformance to, lets say, BS EN 50173-2 which defines the cabling performance specification and its configuration - and now the installation quality assurance and practices as well - what value does the supplier warranty actually provide? Maybe the best criterion against which to judge the value of any warranty is how it answers this question.