Synopsis

Residential networking is taking off and industry standards have recently been approved for home cabling. This is a review of the evolving market plus an outline of the standards.

1. Market Evolution

The market for residential networks has been slow to materialise but is expected to have significant potential in the next 5 years. Primary market drivers include increased homeworking, the distribution of telephony, data and video entertainment services plus enhanced monitoring, control and security. The market for is expected to grow for a broad range of dwellings and may be led by the distribution of data and video entertainment services.

Market analyst Parks Associates published a forecast for residential network nodes in 2001. This predicted some 150 million home-network attached devices by end 2005, with a ratio of at least 2:1 in favour of network-capable entertainment nodes against PC network nodes.

BSRIA published an assessment of the global market for residential cabling in 2002. The market value was estimated to be $236 million in 2002 and $883 million in 2004. These figures reflect a 55% CAGR and represent 14% of the global structured cabling market by 2004. The penetration of home cabling in the US is estimated by BSRIA to be 10% of new dwellings. The penetration rate is also high in China, Hong Kong, Singapore & South Korea. Europe has a low penetration rate today however this is expected to grow strongly in many northern European countries, in particular Germany and the UK. BSRIA also assesses penetration in single and multiple dwellings, noting higher rates of deployment in new build, multiple dwellings in Asia and higher rates of deployment in new build, single dwellings in the US and northern Europe.

2. Industry Standards

There are a number of standards projects for residential cabling and applications. The US was first to publish a national standard for residential cabling; TIA-570-A is based on UTP cabling and represents a fairly basic approach. This standard has since been updated by TIA-570-B.

ISO/IEC has been developing standards for residential cabling and home electronic systems for over 10 years. ISO/IEC 15018 was published in 2004, although its progress has been dogged by differences of opinion, essentially within Europe but also between Europe, the US and Japan. It is worth noting that CENELEC also established its own standards project for residential cabling, EN 50173-4. CENELEC adopted ISO/IEC 15018 as the basis of a European standard but is in the process of simplifying its content.

3. ISO/IEC 15018 Overview

ISO/IEC 15018 defines generic cabling infrastructure for residential environments. It defines cabling for ICT (Information & Communications Technologies), BCT (Broadcast & Communications Technologies) and CCCB (Command & Control Communications for Buildings). Copper cabling is favoured to support remote power and low-cost, with channels up to 100m. ICT cabling is the same as office structured cabling, with a minimum requirement for Class D/Cat 5e and a recommendation to use Class E/Cat 6. Cables may be screened or unscreened. BCT cabling may be Class F/Cat 7 specified up to 1 GHz, or coaxial cabling for shorter lengths only. The Siemon “Terra” connector is favoured for use with Class F/Cat 7 cabling to support cable/connector sharing. Alternatively, an RJ-45 modular connector may be used. CCCB cabling is optional and may be low bandwidth/high current cabling or conventional Cat 5e. Optical fibre may be used as an alternative to copper for ICT and BCT cabling.

The philosophy for ISO/IEC 15018 is modelled on ISO/IEC 11801. Outlets are designed to be within 90m of a patch panel and no more than 100m from active equipment.

The structure of ICT and BCT cabling is shown in figure 1. Connection points are illustrated by “C”. The primary Home Distributor (HD) contains a point of connection to external network services and also to local equipment. A Secondary Home Distributor (SHD) attaches primary home cabling to secondary home cabling, which provides connections to outlets. SHDs and secondary cabling systems are optional. ICT and BCT cabling have star topology between the HD and outlets. A coverage area is defined as a physically contiguous area up to $10m^2$, hence a large room will have several coverage areas.

Brand-Rex
viewfield industrial estate • glenrothes • fife • united kingdom • KY6 2RS
T: +44 (0) 1592 772124 F: +44 (0) 1592 775314
E: brexinfo@brand-rex.co.uk W: www.brand-rex.com

4 twisted pairs are recommended to be terminated at a Telecommunications Outlet (TO), although 2 pairs are allowed if suitably marked. A Broadcast Outlet (BO) may be configured with a minimum of 1 twisted pair or 1 coaxial cable, which is adequate for distributive TV or audio services. The maximum channel distance is 100m for ICT and BCT applications, but may be reduced to 50m for some BCT applications. ICT applications may share BCT cables.

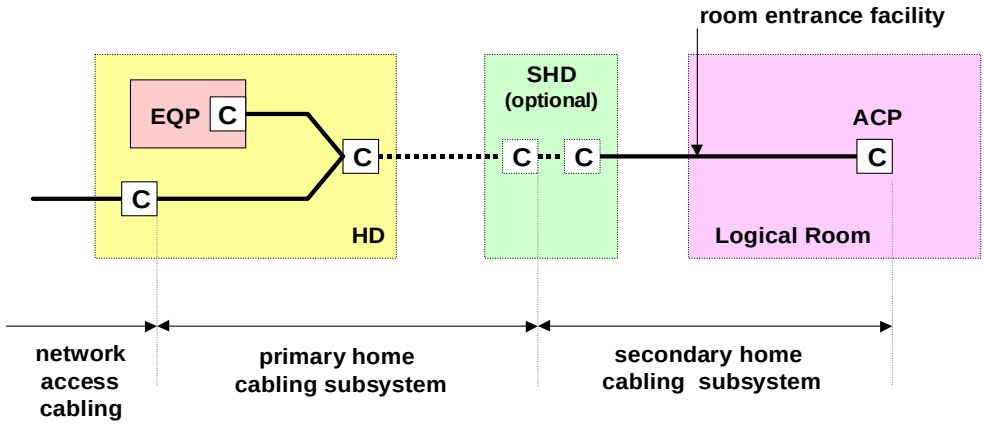

Figure 1: ISO/IEC 15018 Structure of ICT & BCT Cabling

The structure of CCCB cabling is shown in figure 2. CCCB cabling may follow any topology between the HD/SHD and a Control Outlet (CO). CCCB channels may be up to 300m, and the area served may be up to 25m^2. A CO is configured with a minimum of 1 pair and CCCB connections may be fixed, connectorised or punch-down.

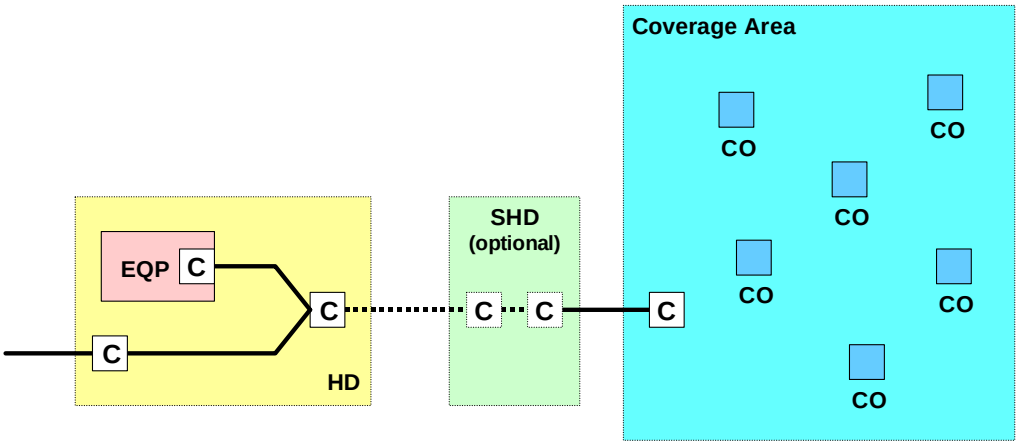

Figure 2: ISO/IEC 15018 Structure of CCCB Cabling

About Brand-Rex

Brand-Rex is a designer and manufacturer of copper and fibre based cabling systems, headquartered in Glenrothes, Scotland with facilities across Europe. Brand-Rex has two primary businesses: Connectivity and Speciality. Its Connectivity division designs and manufactures cabling systems (both copper and fibre) for data communications and is the No.2 player in Europe. The Speciality division exclusively produces cables that are used for control, communications, power and instrumentation within hostile environments.

Brand-Rex
viewfield industrial estate • glenrothes • fife • united kingdom • KY6 2RS
T: +44 (0) 1592 772124 F: +44 (0) 1592 775314
E: brexinfo@brand-rex.co.uk W: www.brand-rex.com