

Network Health Warning

Technical Brief

100 Fx -Tx FAST ETHERNET COMPLIANCE

Limitations exist in the length of connection between devices on a network.

These are accounted for by:-

1. Losses and signal degradation across the cabling
2. Time delay across the cabling and within repeaters.

The connection distance is determined by the time of the shortest packet and the propagation delay (often known as 'round-trip delays').

In standard 10Mbit Ethernet systems this equates to a 4 km span between any two end points (this does not take into account delays within repeaters) unless a bridge is incorporated within the network. It is not dependent on media used, which usually impose a lower limit. If delays within hardware are taken into account the 4 km span will be reduced.

When using 100Mbit Fast Ethernet the same criteria apply, but as the time of the shortest packet is now only one tenth, it now gives a span limitation of 400m. Therefore, although a standard 100 Fx -Tx converter will have a range of 2km, with respect to losses in the fibre, only 400m of this is usable with respect to time delay limitations. This theoretical distance includes the combined total cable length of the span, but does not take into account delays within repeaters. When taking time delays of repeaters into account then the repeaters must be co-sited, if 100m of UTP is required.

To exceed this range of 400m in a 100Mbit Ethernet system a bridge or switch type converter must be used. In this case the span is limited only by the cable medium used.

A standard converter may be used if the distance to a bridge/switch or end is less than 400m from the point of packet generation. If the span is greater than 400m a switch type converter must be used at both ends of the link.

Hubs fall basically into 3 categories:

STANDARD HUBS i.e either 10M or 100M

10/100 SPEED HUBS - contain a 10M and 100M repeater with a bridge between them, but do not appear as a bridge externally.

SWITCHED HUBS / BRIDGES contain memory and therefore overcome time delay problems.

Standard hubs and speed hubs will require switch converters unless the distance is short, however some Speed Hubs have a 3port internal bridge and can use standard converters.

Volamp produces both types.

The standard converter, type **100 FU**, and the switched converter type **10/100UFS** (Both Auto Negotiating).

CONVERTERS MADE BY SOME COMPANIES WILL NOT FUNCTION ON AUTO NEGOTIATING HUBS .

We hope this Technical Brief will be of use in selecting the correct type.