

**PROFIBUS COMPETENCY CENTRE, AUSTRALIA TECHNICAL SERIES**

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**SUBJECT: SEGMENT - STATION COUNT**

RS 485 transmission imposes a limitation of 32 devices in a segment, which is a separate piece of copper cable that must adhere to RS 485 rules. However, the overall network can have many more devices and cover a much longer distance than the RS 485 rules imply. This limitation is overcome by linking *segments* into a network, which are electrically isolated but which communicate using *repeaters* or *fibre-optic links*.

Within a segment, all stations and repeaters count towards the 32-device limit. This means, for example, that if two repeaters are connected to a segment the maximum number of stations is reduced to 30. It is good practice to leave at least 10% spare capacity per segment for future expansion and diagnostic tool connection.

The standard allows a maximum of 9 repeaters which can be used to ensure the maximum station count in a network. Notably, most repeater manufacturers' instructions recommend a maximum of only 4 repeaters between any master and slave, giving a maximum of 5 in-line segments from the master.

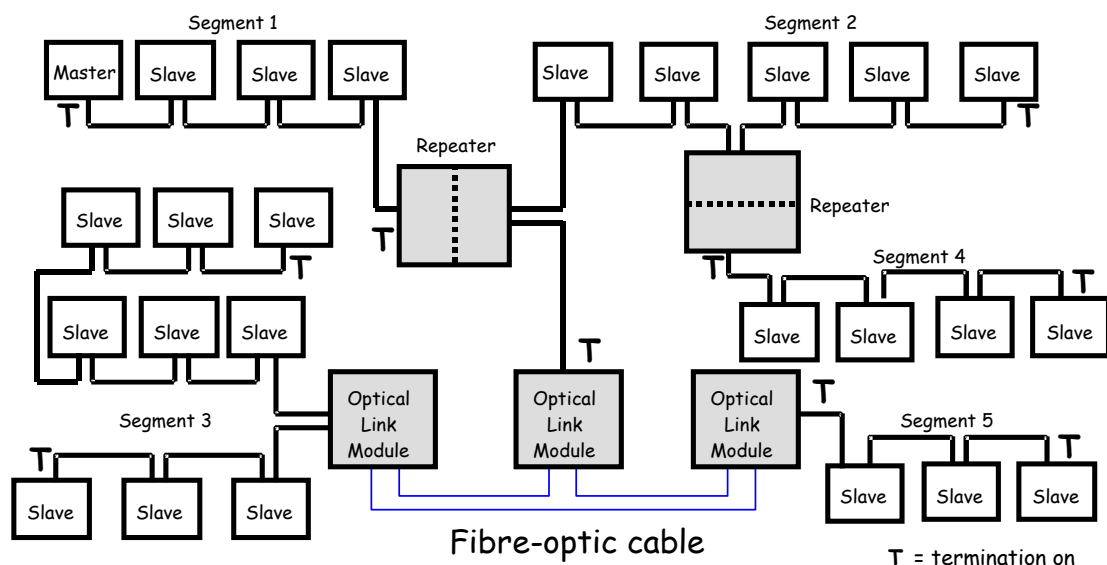


Fig. 1 Typical Network Layout<sup>1</sup>

References:

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<sup>i</sup> CPIC Presentation L02 Verwer Training & Consultancy Ltd.  
The New and Rapid Way to PROFIBUS DP, Manfred Popp

<http://www.profibuscetre.com.au>  
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