

Background information:

## Plastic fiber optics

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### Basics

Transmitting data using light through an appropriate fiber optic cable offers two critical advantages over copper technology:

- 100% galvanic isolation:  
No conducting connection between the terminal devices. This virtually eliminates the problem of ground shift.
- No EMC problems:  
Since there is no direct electrical connection, and therefore no current flow, fiber optics transmission cannot be affected by radiated noise, nor can the system itself generate electromagnetic noise.

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### Connectors

The disadvantages of traditional glass fiber optic cables lie in the complicated, time-consuming and therefore expensive assembling and handling of the transmission medium. The use of plastic fiber optic cables completely eliminates this problem. Assembly is limited to the trimming of the cables with a sharp knife and then inserting the end of the fiber into the automatically locking fiber optic receptacle on the terminal devices:

- Cut fiber optic cable as squarely as possible using a sharp knife
- Separate the two leads of the duplex cable to approx. 2 cm from each other
- Insert fiber optic cable into the patented receptacle of the W&T interface.
- Connect interface to serial terminal device
- That's it!

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### Physical method of transmission

In fiber optic transmission, the information is 'coded' simply by the two light states "on" or "off", with the wavelength of the red light used lying within the highly visible range of 650 nm. One lead of the duplex cable is used for each data direction, so that all applications which can be handled by a pure data connection without additional control lines are suitable for fiber optic transmission.

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### Cable length

The maximum length of a plastic fiber optic connection is approx. 100 meters, which compared with the RS232 interface means an increase in the allowable cable length by a factor of 4 to 6.

Fiber optic transmission over distances of greater than 100 meters can be accomplished by using fiber optic repeaters, which divide the transmission line into two or more fiber optic segments.