

Telecode TDM

Time Division Multiplexer for electrical distribution applications

Telecode TDM is a hardwired very high integrity system that can transmit a large number of controls and indications replicating them at the receiver.

Typical applications include

- **Electricity Supply Industry**
 - Over 1,000 supply line protection/inter-trip systems supplied to regional electricity distribution companies
 - 400kV underground cable alarm monitoring systems
 - Generator/transformer protection systems
 - Remote control fibre optic multiplexer for CHP station
 - Oil field under sea sub-station control system
- **Railway Industry**
 - Major light railway power protection and control scheme
 - CCTV level crossing remote controls and indications
 - Trackside telephone signalling multiplexer
 - Multipair signalling cable replacement
 - Transmission of emergency alarms
- **Telecode TDM – Proven Equipment**
 - Compatible with earlier Telecode TDM systems
 - Not microprocessor based
 - More than 1,100 systems in service worldwide
 - Over 9,000 equipment years' experience



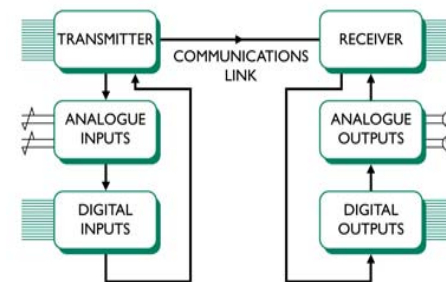
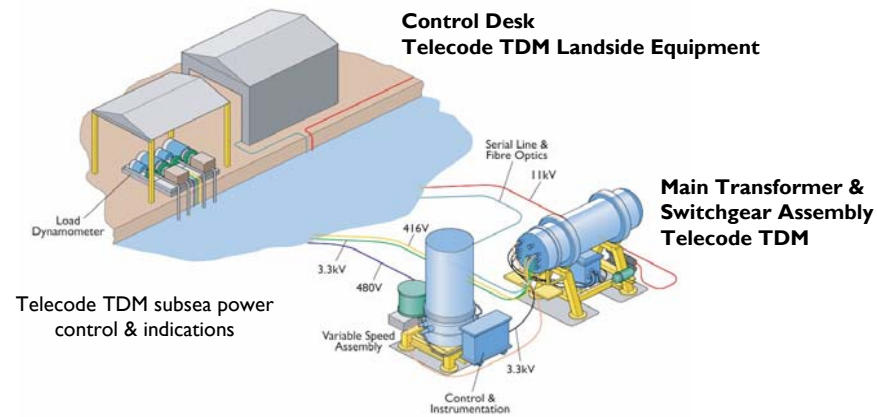
Three-part wall mounted cabinet with hinged section

- **Telecode TDM – Benefits**
 - Significant cost savings possible
 - Saving on conventional cabling costs
 - Proven reliability
 - Thousands of equipment years
 - Digital principles
 - Easy to understand
 - Few adjustments
 - Commissioned quickly
 - Modular concept
 - Easily extended
 - Small number of card types
 - Small spares holding
 - High reliability
 - Very low maintenance costs
 - No microprocessor
 - No software validation or support

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Telecode TDM Fibre Optic Control Cabinets



Telecode TDM block diagram (one way) of digital and analogue system

Telecode TDM at London Docklands Light Railway

- Timings for typical systems
- 15 digital inputs
- 0.8 ms at 64 kilobits/s
- 55 ms with 1200 baud modem
- 239 digital inputs
- 9 ms at 64 kilobits/s
- 530 ms with 1200 baud modem
- 15 digital plus 40 analogue signals (12 bit resolution)
- 1.5 s with 1200 baud modem
- Times for specific configurations are available.

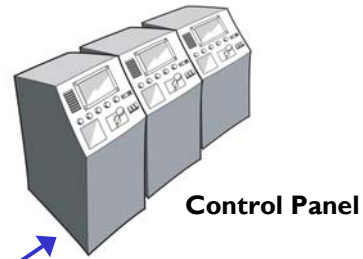
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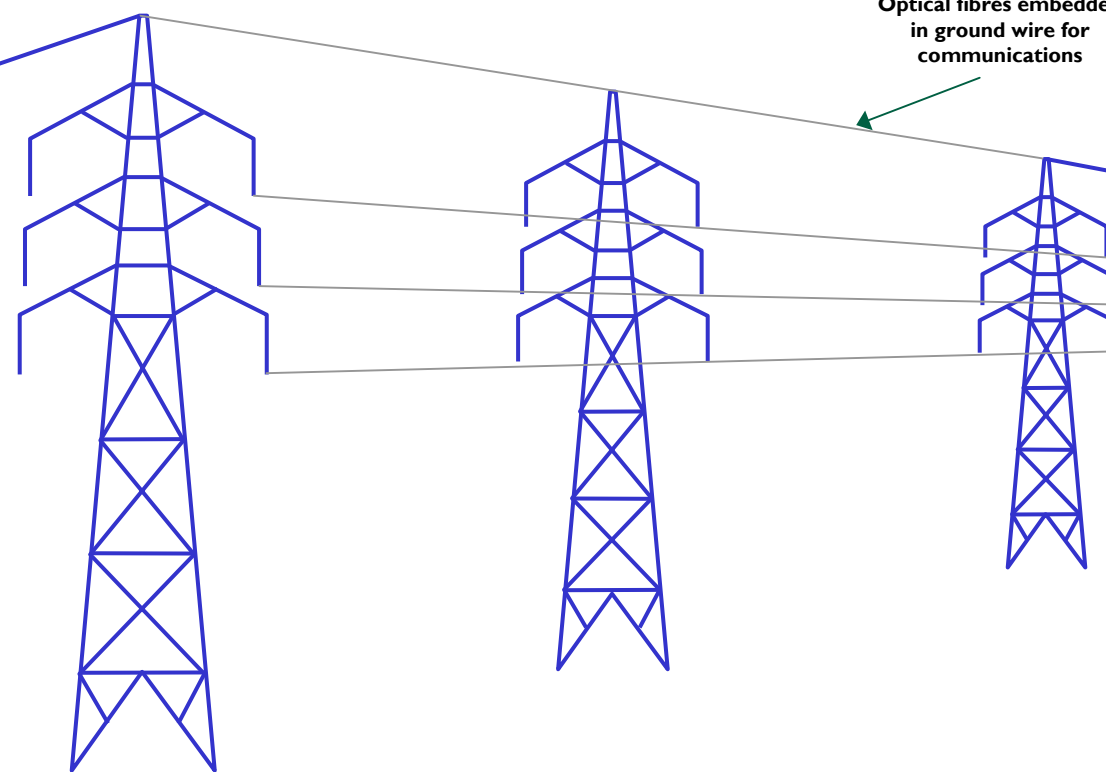
Digital inter-tripping, protection & control multiplexing



Control Panel



Combined Heat & Power Plant (CHP)



Optical fibres embedded in ground wire for communications

If a fault occurs in a transmission or distribution network causing a circuit-breaker to trip, it is essential that other breakers on that circuit are also opened to prevent possible damage to associated equipment. This is the primary function of inter-tripping.

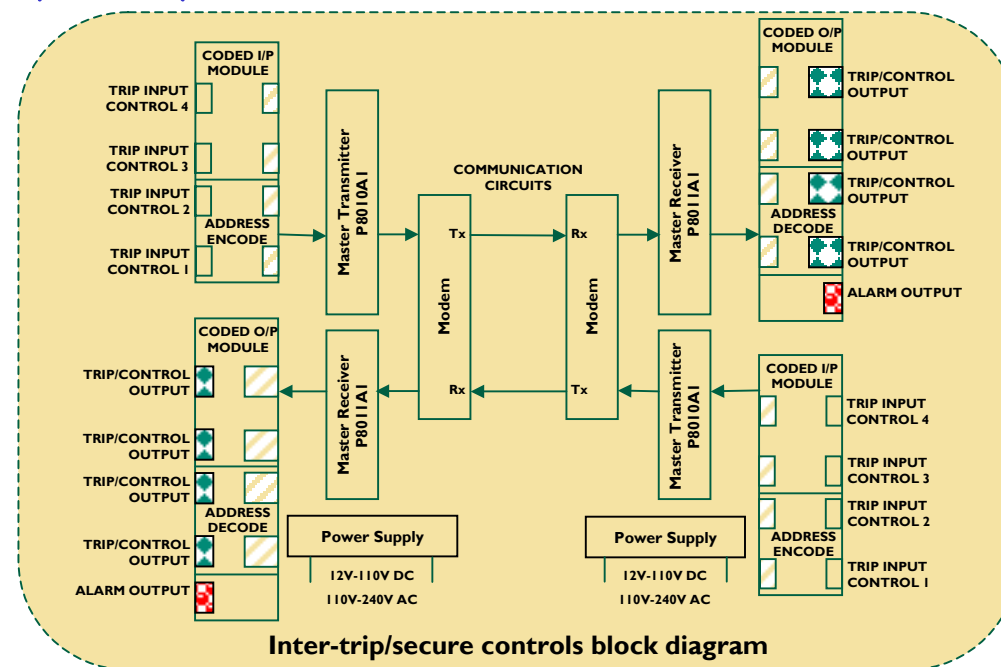
The Telecode TDM protection multiplexer will transmit many inter-tripping, digital on/off and analogue signals between two or more sub-stations.



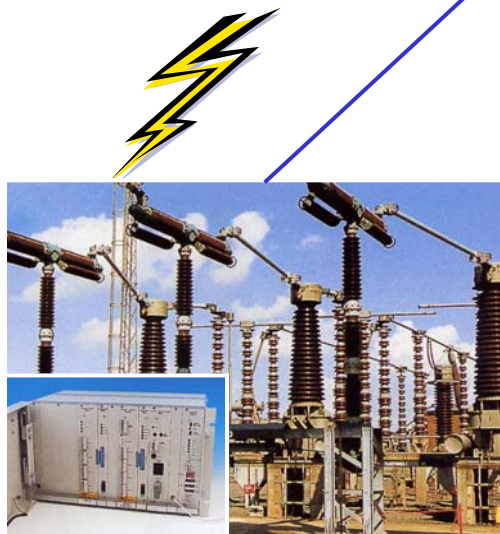
Telecode TDM Remote Plant Control & Indications Monitoring Cabinet



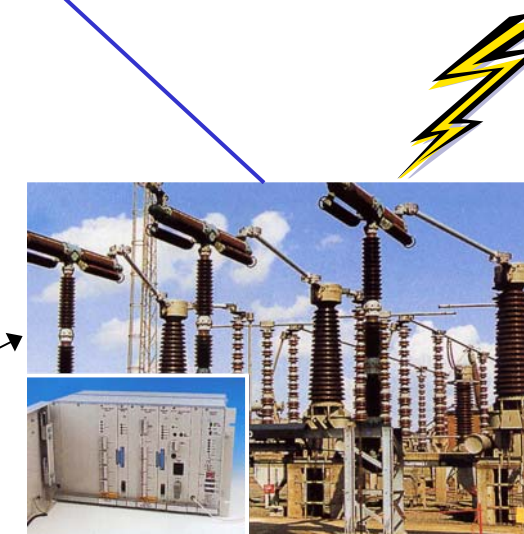
Telecode TDM Remote Plant Control & Indications Monitoring Cabinet



Inter-trip/secure controls block diagram



Telecode TDM digital inter-tripping or protection multiplexing equipment



Telecode TDM digital inter-tripping or protection multiplexing equipment

- ◆ Dedicated Voice Frequency (VF)
- ◆ Up to 64 kilobit/sec X21 Data Communications
- ◆ Dedicated Fibre-Optic Link - mono-mode or multi-mode
- ◆ Microwave link