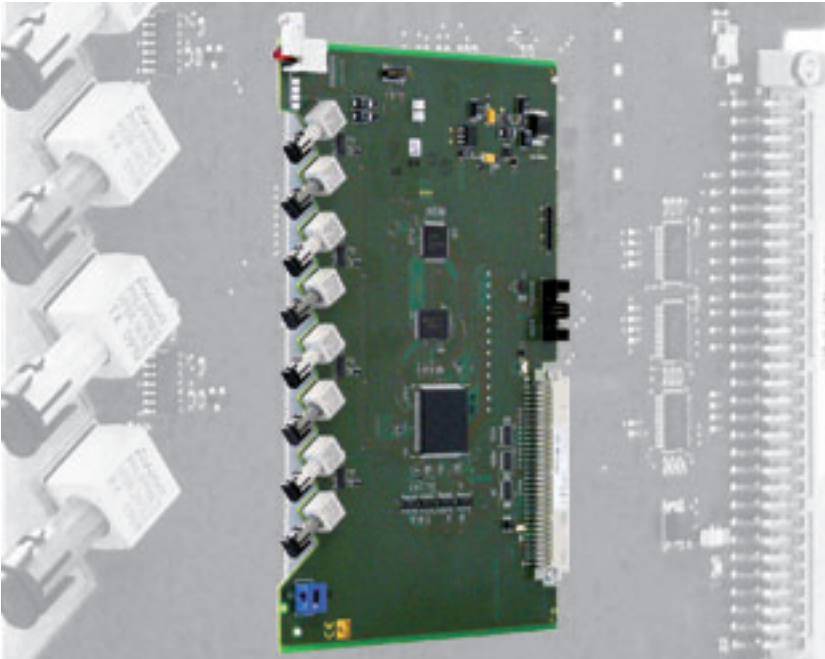# XMP1 OptC37

## Module for reliable transmission of teleprotection services



- 4 optical interfaces
- Integration of the IEEE C37.94 protocol in the multiplexer
- Direct optical connection of multiplexer and teleprotection equipment
- Mounting in XMP1 and XMP1-SL possible
- Supports n x 64 kbps protection mechanism
- Fully integrated in the ServiceOn XMP1 network management system

Teleprotection equipment is used by utilities to protect power distribution networks. Should a malfunction occur, its purpose is to quickly switch on alternative routes in the electricity grid. Therefore it is very important in preventing power outages to the customer.

The teleprotection equipment is in high-voltage areas. Optical interfaces are used to prevent electromagnetic and high-frequency interference, as well as a potential rise (GPR) in the telecommunications network.

### ■ Optical IEEE C37.94 services in the XMP1

The IEEE C37.94 is a standard for transmitting n x 64 kbps signals via optical interfaces between teleprotection equipment and multiplexers.

In the past, the IEEE C37.94 interfaces were not supported by multiplexers. In order to connect teleprotection equipment with multiplexers, converters from electrical V/X interfaces to the optical C37.94 were required. The disadvantage of this solution was that the status of the connection between the teleprotection

equipment and the multiplexer was unknown. Using the OptC37 module overcomes this disadvantage.

The OptC37 module is fully integrated in the ServiceOn XMP1 network management system. As a result, the status of the module and the optical connection are constantly monitored.
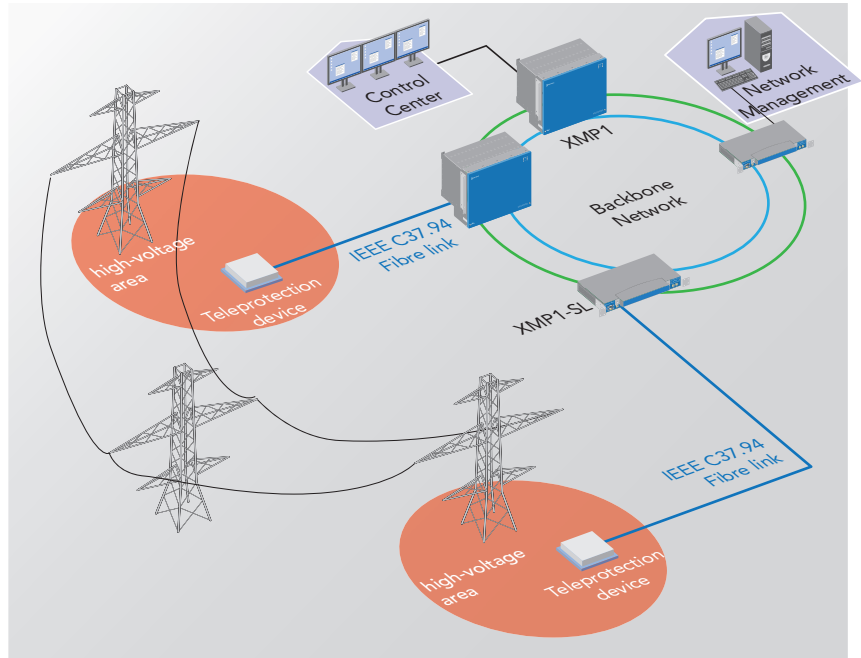
The OptC37 has four IEEE C37.94 optical interfaces for transparently transmitting n x 64 kbps signals at n = 1 to 12. Between the multiplexer and the teleprotection equipment the

optical signals are transmitted separately when sending or receiving via 62.5/125 μm multi-mode fibre. Distances of up to 2 km can be bridged. Therefore a direct IEEE C37.94 optical connection is now possible between the multiplexer and the teleprotection equipment. Electrical/optical converters used in the past are no longer required.

The four optical interfaces in the module are IEC 60874-10 (BFOC/2.5) compliant. The OptC37 module can be mounted in the XMP1 subrack and in the XMP1-SL. It takes up one slot each.

The protective switching mechanisms in the XMP1 system and n x 64 kbps protective switching are supported.

All alarms are reported to the NMS. During commissioning and testing, internal and external loops near to the optical interface can be switched.

The ServiceOn XMP1 (SOX) end-to-end management platform fully supports the configuration and monitoring of the OptC37 module and the XMP1 network. Local management of the OptC37 module is supported with the Local Craft Terminal (LCT).

## Technical Data

| Optical Interfaces | |
| --- | --- |
| Number of ports | 4 |
| Interface type | optical for multimode fibre optics 62.5/125 μm |
| Standard | IEEE C37.94 |
| Optical power budget | 8 dB, type 15 |
| Wavelength | 820 nm ±25 nm |
| Coding | NRZ |
| Connector type | IEC 60874-10 (BFOC/2.5) ST-connecting system |
| Data rate | n x 64 kbps n = 1 to 12 (64 kbps . . . 768 kbps) |
| Transmission rate | optical 2048 kbps |
| Transmission range | up to 2 km |
| **Management** | |
| ServiceOn XMP1 LCT | For local management |
| ServiceOn XMP1 | For centralised management |
| **Power Supply** | |
| Nominal input voltage (min/max) | -48/-60 V DC (-40.5 V DC ... -72 V DC) |
| **Operating Environment** | |
| Temperature range and humidity | According to XMP1 environmental specifications |

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