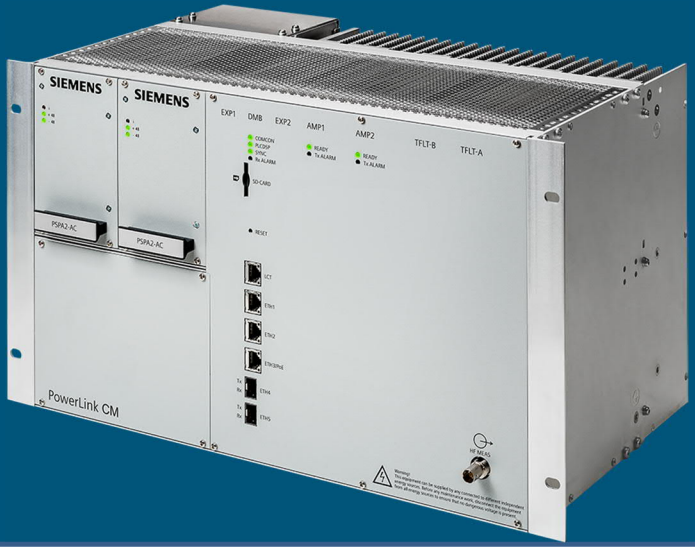

POWERLINE CONDITION MONITORING

PowerLink CM

Making the most of your transmission lines

siemens.com/powerlink-cm

Description

The increasing competition in the energy market leads to strong cost and efficiency pressure along the complete value chain of power generation, transmission, and distribution. Under such circumstances, ensuring highest availability requires the best possible operational performance and efficiency.

On the transmission side, high efficiency is – among others – determined by operating the transmission network at its optimum level, by fast resolution of line faults, and by minimizing unexpected downtime events.

Today's most common solutions indirectly monitor the line condition by measuring current and voltage. Line faults are typically localized by using detectors based on travelling wave technology.

While these methods work reasonably well on powered lines, they fail on grounded or unpowered lines as used in particular in the HVDC environment. In addition, fault locators utilizing travelling wave mechanisms require the detectors to be active at the exact time of the fault event.

With PowerLink CM, Siemens offers a Condition Monitoring solution to allow for precise localization of line faults and to continuously track the condition of your transmission lines. PowerLink CM is an element of Siemens' proven PowerLink portfolio. It combines more than 80 years of experience in powerline communication technology with innovative monitoring capabilities.

Fields of application

PowerLink CM is a state-of-the-art, active condition monitoring solution designed to serve two main purposes: fault location and continuous line monitoring.

The primary purpose is to precisely identify the location of line faults, be it open (e.g., line break) or close (e.g., short). The system keeps any kind of power line, phase, ground, or metallic return, under surveillance and provides alarming as well as precise fault localization. Location information is available at time of the fault event but can also be triggered after the event.

If used in continuous operation mode, variations in line impedance characteristics are monitored over time and distance. By means of such long-term statistics on line condition even sporadic events, like ground clearance, clearance to trees, impact of climatic changes or of peak loads can be detected and located. This allows the identification of upcoming line issues before a serious fault condition is reached. Counter measures, such as preventive maintenance can be initiated in time to efficiently reduce downtime and other potential risks.

After a maintenance interval, the system may be used to ensure that the line is ready for re-commissioning. This "pre-commissioning line check" avoids potential damages caused by e.g., connections not being ready, or equipment left on the line.

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Functions/Features

- Integrated spectrum analyzer
- Fault location accuracy of up to 0,1% of line length
- Detection of slow, long-term line condition changes (impedance variations)
- Storage of measurement data in flash memory or on SD-card
- Easy configuration via web interface
- Cloud connectivity allowing easy access to measurement data from anywhere
- NMS integration via standard SNMP v2/3 interface
- Adjustable bandwidth range of up to 256 kHz
- Efficient bandwidth management supporting non-contiguous frequency bands
- Coexistence with PLC systems operating on same or neighboring line
- Offline analyzer tool available

Benefits

- Continuous monitoring of HVAC or HVDC lines
- Monitoring of powered, unpowered, or grounded lines
- High precision localization of line faults, even after the fault event
- Detection of various fault types: ground fault, short circuit
- Early recognition of potential line deterioration
- Single-sided measurement
- Possibility to monitor lines up to 1000km
- Feed line fault detection

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