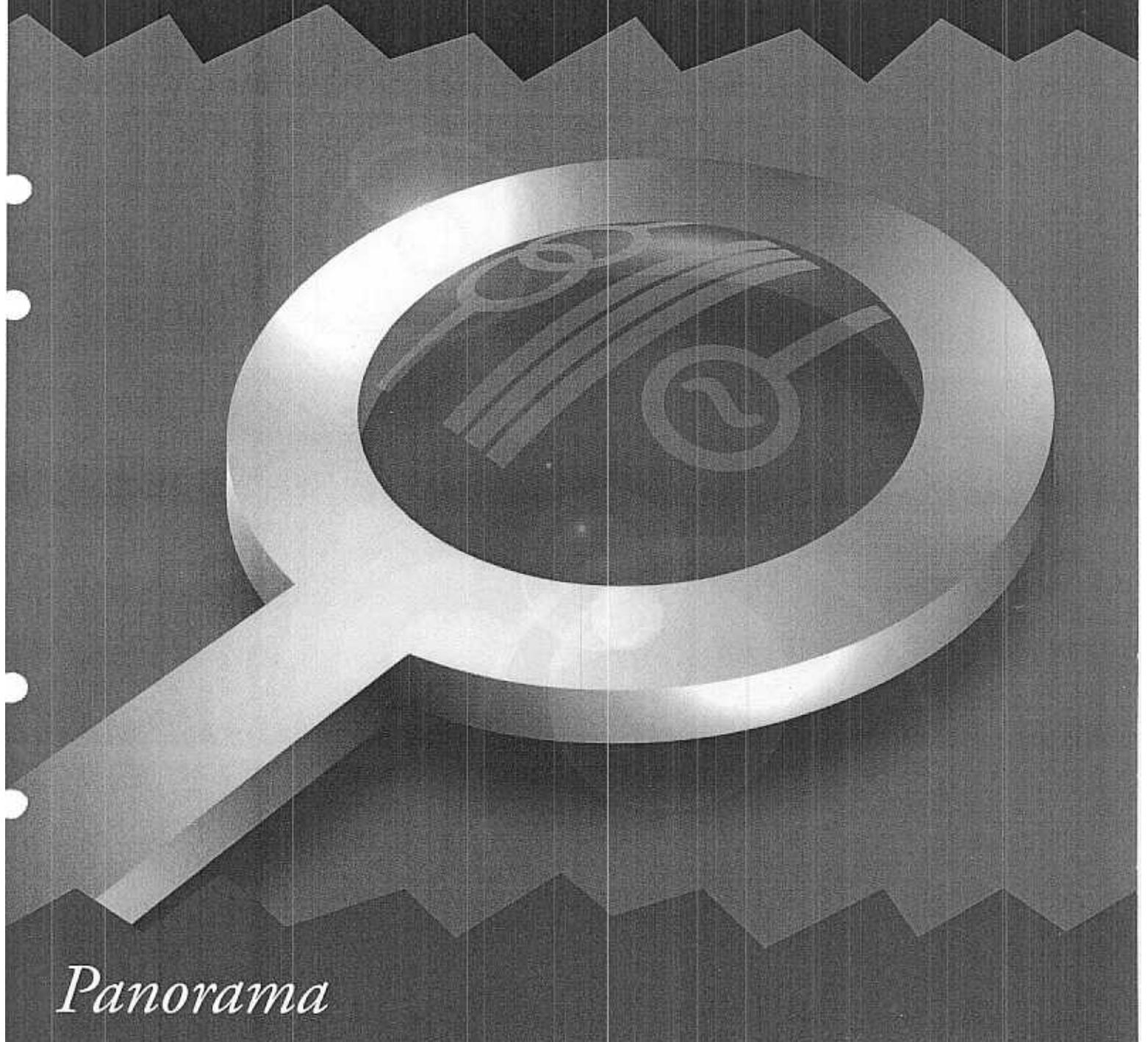


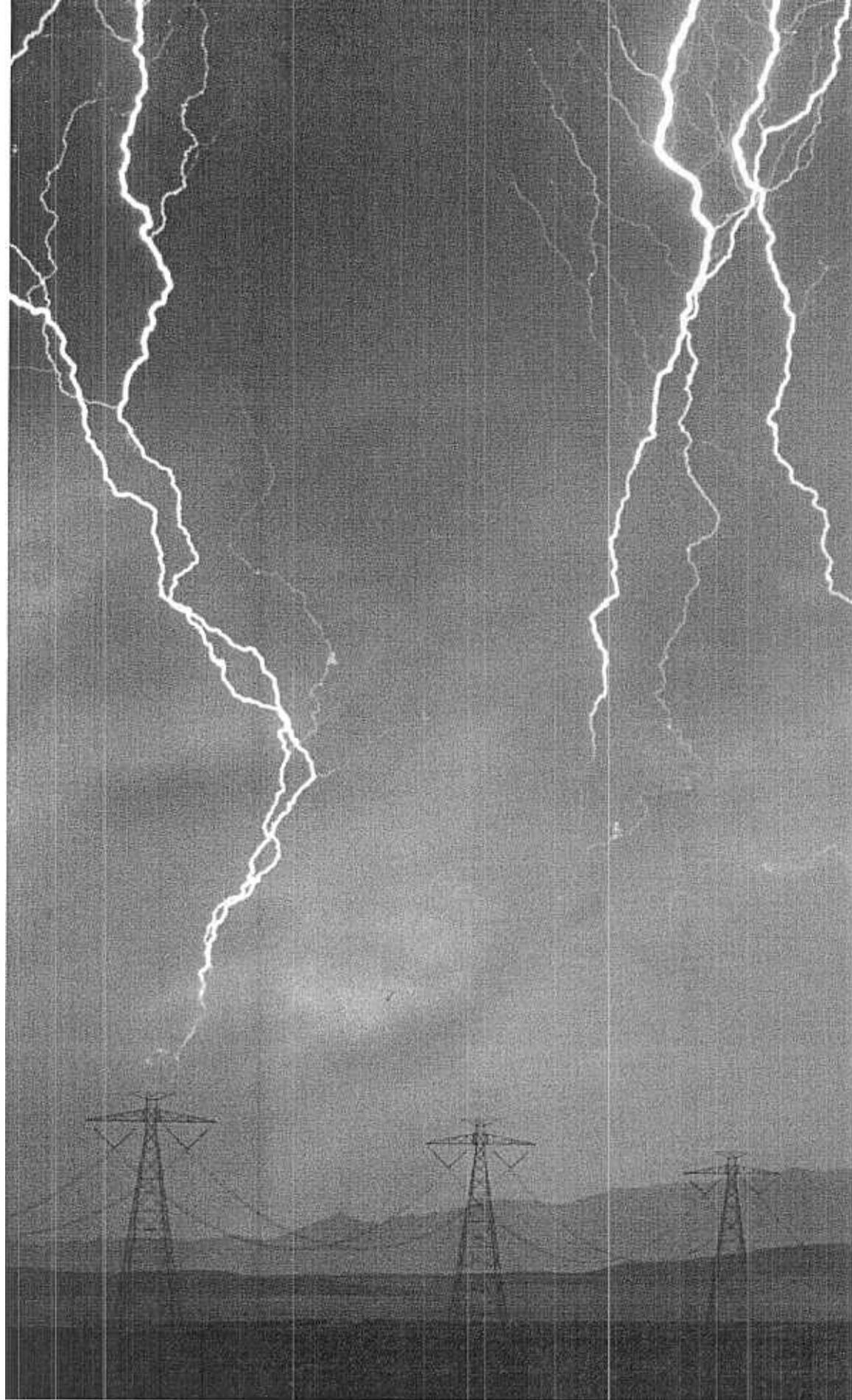
Substation Monitoring



Panorama

ABB Network Partner

ABB



The most recent generation of Information Technology brings protection and control terminals to the utility personnel, wherever they are. This also brings benefits in terms of substantial cost savings and new ways of acquiring all the information necessary for the efficient management of secondary equipment in a power network. In order to guarantee efficient utilisation, information must be well structured, and powerful and consistent tools must be available for handling it. In a broader perspective, Substation Monitoring solutions contribute to more cost-effective utilisation and higher availability of primary equipment.

Substation Monitoring with enhanced customer value

The world of Information Technology, information super-highways and computers is rapidly changing the way in which many people work. These areas are also becoming increasingly important in the sphere of protective relaying. Virtually all modern numerical relays are equipped with one or more serial communication ports through which the full range of available information can be acquired swiftly and reliably.

The integration of functions into one and the same relay is also increasing rapidly. For this reason, relays are referred to nowadays as "terminals", since they include functions traditionally provided by other equipment and systems. As a rule of thumb, we can say that today one terminal housed in a single box provides the protection, control and monitoring functions which 10 years ago would have required one or two full cubicles. Supporting programs and systems are available to secure all the potential advantages of this integration, as well as the change in technology. Due to the immense flexibility of today's terminals and systems, virtually any customer need can be met.

The term SMS stands for Substation Monitoring System, a system which exploits the storage and communication capability of protection and control terminals, as well as alarm annunciators, by using them as process data acquisition units in a PC-based evaluation system. SMS is an information system which offers free access at any time to process data such as alarms, events, load or fault conditions. The protection engineer is able to check and alter parameters from his desk if the need should arise, or analyse faults by using the extensive disturbance information provided by the system.

The main advantage, however, is that the SMS approach allows the user to economically monitor all substations in a transmission or distribution network containing protection terminals. The process data derived in this way is beneficial throughout the utility for system diagnostics, maintenance planning, equipment replacement strategies, system expansion planning, etc. The benefit which the customer draws from SMS can be seen in terms of substantial cost savings, with reduced overall operation costs and increasing network availability.

The functionality and flexibility of the latest generation of PC programs necessitates high-quality documentation as well as professional support and training courses. The ABB Network Partner name stands as a solid guarantee for fulfilling these requirements. All programs employ standard user interfaces for added convenience.



System configuration and engineering

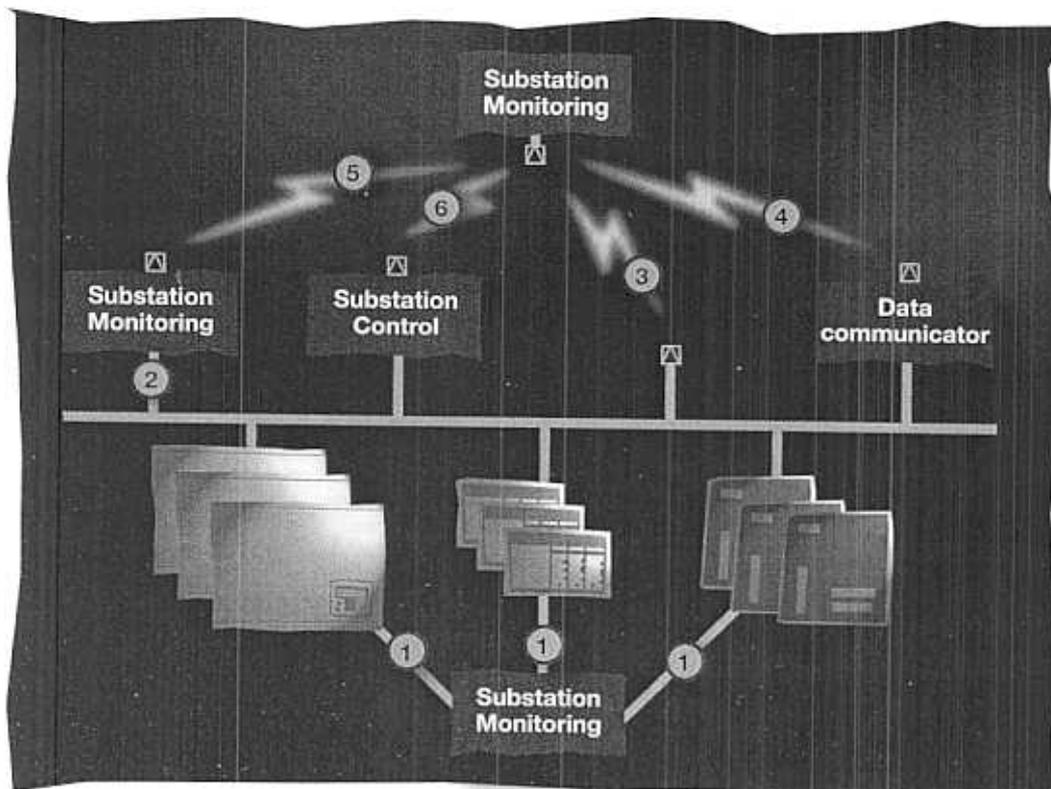
SMS is part of the PYRAMID® concept for Substation Automation and the Panorama concept for Power Network Management. Panorama includes intelligent terminals in the intelligent substation for the intelligent power network, from generation to consumption.

Substation Monitoring can either be built up as a separate system, or be part of a totally automated substation including a control system. The three keywords for the system configuration are:

- Modularity
- Flexibility
- Simplicity

Modularity

SMS software and hardware are both built up in a modular structure so as to fit all applications. The configuration is based on the distributed intelligence provided by the terminals. A fibre-optic connection is enough to establish communication. All the information can be acquired in the SMS personal computer (PC) in the station, or from remote locations via telephone modems. Depending on the application, different hardware and software modules are added to the system. The software is built up in a truly modularised and object-oriented way. This ensures the possibility of step-by-step implementation and subsequent upgrading of the system.



The configuration of the Substation Monitoring System must be modularised and flexible in order to meet the requirements in a cost-effective way. The summarised figure shows all the possible locations and access points of the SMS PC. Multiple access points, with consistent user interfaces, are the basic building-blocks of the PYRAMID concept. The exact function and the specific range of options depend on system configuration. The communication from remote locations can for example be done by means of telephone modems.

The numbers in the figure refer to the numbers mentioned under the Flexibility section.

Overall system economy is to a large extent a function of simple and efficient engineering and maintenance of the system structure, and it is normally undertaken by the user. The installation and utilisation of the various programs call for high-quality documentation as well as professional support.



Flexibility

System configuration flexibility is achieved through different ways of communicating with the terminals. The SMS PC can communicate with the terminals in several ways.

1. To the front of the terminal for temporary connection during commissioning and maintenance work.
2. Local connection directly to the terminals via the station bus.
3. Remote connection directly to the terminals via a telephone modem.
4. Remote connection via local data communicator also serving as event handler.
5. Remote connection via an SMS PC in the station.
6. Connection via the Substation Control System (SCS).

The consistency of the user interface must be guaranteed in a whole range of working environments. This gives the protection

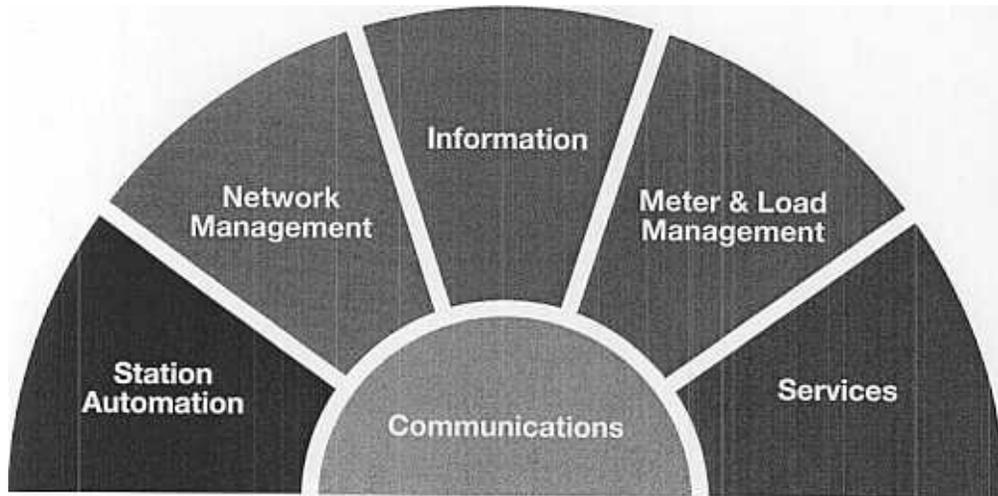
engineer the possibility of checking and altering the settings from the Substation Control System without feeling uncomfortable because of a new presentation and handling setup. For most programs different languages versions are also available. All for user convenience.

Simplicity

Simplicity does not refer to functionality but rather to the installation, engineering and handling of the system. SMS utilises standard hardware, such as PCs, printers, and telephone modems. Moreover, the standard user interfaces including help-systems to guide the user, very much simplify the operation.

System installation and engineering can in most cases be carried out by a user with only limited previous knowledge of the system. This offers a simple and less expensive entry into the new world of Information Technology, which can later grow into a full SCS solution.

Substation Monitoring



Panorama is the ABB solution for efficient and reliable management of power networks.

Panorama stands for an open view in all directions, utilizing innovative information technology.

Panorama enables the user to always be in perfect control of the power process, from generation to consumption.

Panorama is the complete concept for today and for the future, from ABB Network Partner.

Panorama

ABB Network Partner AB
S-721 71 Västerås
Sweden
Tel +46 21 32 13 00
Fax +46 21 14 69 18

AB Transmit Oy
Relays and Network Control
P. O. Box 699
FIN-65101 Vaasa
Finland
Tel +358 61 3160
Fax +358 61 316 1599

ABB Network Partner Ltd
Haselstrasse 16/122
CH-5401 Baden
Switzerland
Tel +41 56 205 77 44
Fax +41 56 205 55 77

ABB Network Partner

ABB