

## DIGSI 4

### One Software for all SIPROTEC Protection Relays



#### Description

DIGSI is a familiar trade name already today. Originally launched as an MS-DOS software, DIGSI, in its third version, was developed to become a convenient tool for setting numerical protection relays under MS Windows. DIGSI 4 now is the logical innovation for easy-to-use and user-friendly setting, commissioning and operation of all SIPROTEC protection relays, whatever the version. With a PC or Notebook, you can set the relays via one of the interfaces and read out and visualize fault data.

Because of its modular design, DIGSI can be used economically depending on the respective requirements. The basic version DIGSI 4 Basis already covers most standard tasks. The basic version can be extended with optional components. The basic version includes:

- Setting parameters and routing
- Human-machine interface
- Commissioning, controlling and testing
- Communication via a direct connection, via PROFIBUS-FMS or other bus systems.

The complete version DIGSI 4 Professional has a greater scope than the basic version with the following additional functions:

- Display Editor – for creating and modifying default and single-line diagrams shown on the display
- SIGRA – for visualizing and evaluating fault records
- DIGSI Remote – for remote controlling of SIPROTEC 4 relays via a modem connection
- CFC – for creating new functionality or for changing the predefined interlock conditions
- IEC 61850 System Configurator – for configuring and parameterizing IEC 61850 stations. This tool allows you to manage subnets, network communicators and their IP addresses and to connect the information items of different communicators.

By the way: If you are already working with the engineering tool SICAM plus TOOLS, you can integrate the functionality of DIGSI 4 seamlessly into the SIMATIC Manager. You can also use DIGSI 4 in conjunction with SICAM on the station control level without any problems.

The CD-ROM contains all components in English, German, Russian, French and Spanish. A “quick start” manual and the cable for direct connection between PC and protection unit is also delivered.

#### Function overview

- Device administration in projects with freely configurable hierarchies for any substation and electrical power station topology
- Import and export of parameter sets
- Full use of the great flexibility of the PLC (Programmable Logic Controller) without any programming skills
- Modify the default and single-line diagram displays preset in the factory with the Display Editor – just like a conventional image editor
- Precise fault analysis with SIGRA: visualization of fault records in curves over time, circle diagrams, vector diagrams, and bar charts
- Innovative I/O configuration in a clearly structured matrix
- Intelligent plausibility checks rule out incorrect input
- Graphical visualization of characteristics and zone diagrams with direct manipulation of the curves
- Password-protected access for different jobs such as parameter setting, commissioning and controlling (authorized staff only)
- Testing and diagnostic functions – decisive support in the commissioning phase
- Direct operation via serial port, remote operation via modem
- Field bus communication via IEC 61850 protocol IEC 60870-5-103 protocol and PROFIBUS-FMS protocol

#### Hardware requirements

- Pentium with 800 MHz processor
- 500 Mbyte of free hard disk space
- 128 Mbyte of RAM (256 Mbyte recommended)
- CD-ROM Drive / DVD-ROM Drive
- Pointer device (i.e. mouse)
- Serial port (COM)
- USB port

#### Software requirements

- MS Windows 2000 / XP Professional Edition

**Functions**

*DIGSI 4 Manager – the start platform*

When working with DIGSI 4 Basis, you start out from the DIGSI 4 Manager: with this tool, you can conveniently structure and manage projects; freely-configurable hierarchies allow for representing any station topology. The protection relays are simply chosen from a catalog and dragged into the project. Beside the possibility of archiving entire projects, the customer now also can export individual units, e.g. to a floppy disk: time-consuming search within the file system is a thing of the past.

By double-clicking a relay, you will see all the operating features: This gives you direct access to the parameter setting, I/O configuration and – provided that you are online – the commissioning functions and process data. It corresponds exactly to the menu tree implemented in the units; this consistency facilitates mixed operation, in particular during commissioning.

*Routing and allocation*

While in the previous versions the user had to browse through a series of operational sequences in order to link one single signal to a relay input or output, the allocation matrix is a real innovation in this respect: All items of information are listed in one window sorted according to functions and can be configured very easily and allocated without intermediate steps to the desired I/Os, LEDs, buffers and the system interface, which also appear in this window. Example: If you want a signal to be processed by the PLC or to be displayed dynamically in the default or single-line diagrams, all you have to do is making a “check mark” in the corresponding cell. A wide range of filters plus the possibility to “expand” or “collapse” rows or columns in a flash ensure perfect overview.

*Parameterizing*

In the clearly-structured tabbed dialog boxes, only the settings you really need and which are determined by the functional scope are displayed. Particularly when making the protection relay-specific settings, it may be of advantage to display the tripping characteristics. With just one mouse click in the settings dialog box you can visualize the characteristics or zone diagrams in a window, depending on the set values. This allows you to observe conveniently the effects of any change in the settings.

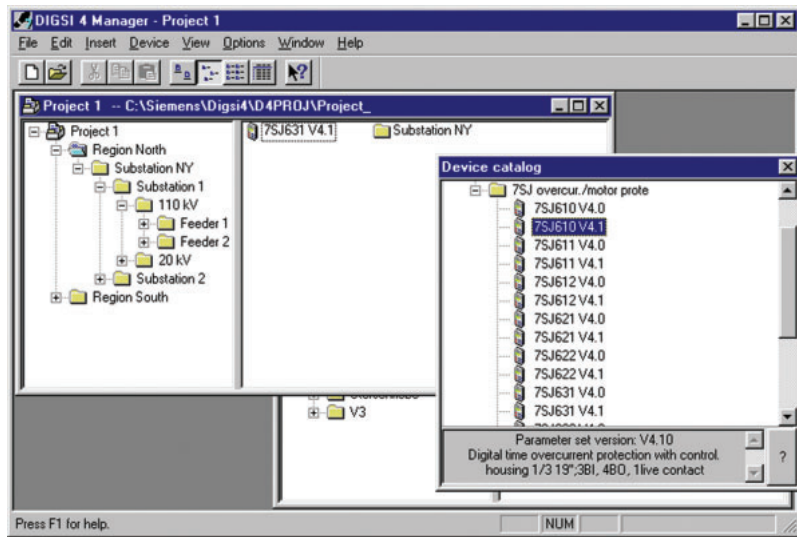


Fig. 3/1 Easy management of relays in projects

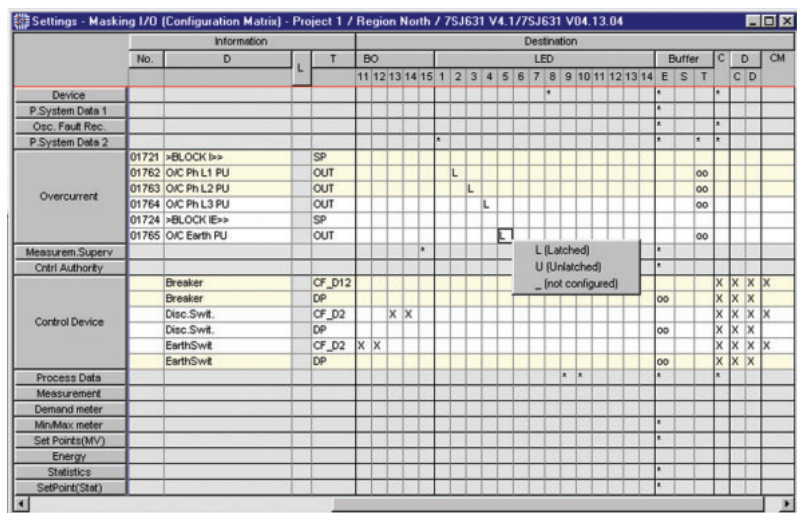


Fig. 3/2 Routing of indications, measured values and commands in a concise matrix

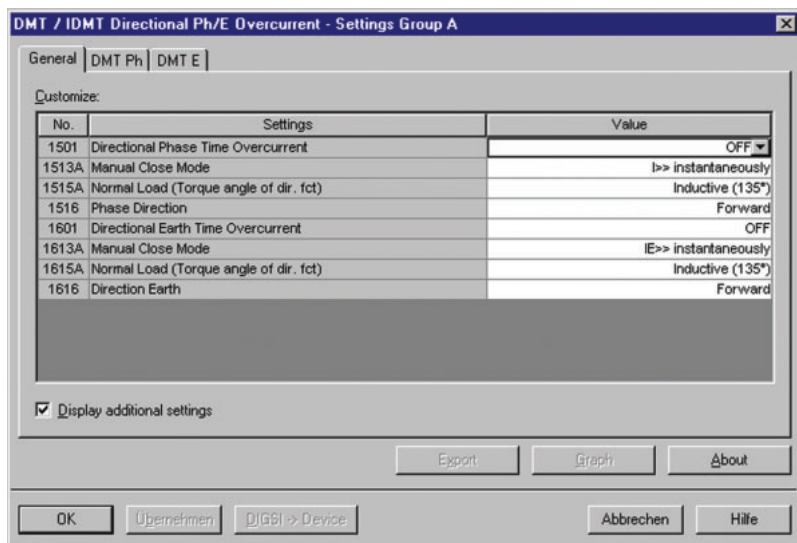


Fig. 3/3 Well-structured parameterizing with context-sensitive help

## Functions

### Test & Diagnosis

The testing and diagnostic functions provide decisive support during the phase of commissioning; you can check quickly and easily the wiring or observe the effect that an indication transmitted via the system interface causes in the higher-level station.

The fault indications which are logged in the relay in the case of a disturbance are listed in DIGSI and can be saved and printed out for documentation purposes.

### SIGRA for fault analysis

The integrated Comtrade Viewer 4 allows you to visualize the corresponding measured variables in curves as a function of time. However, if you are looking for a convenient tool which offers a more detailed fault analysis and is able to handle not only curves, but also circle diagrams, vector diagrams and bar charts, then the SIGRA 4 optional package is the right choice. On the basis of the measured values which are registered in the fault record, SIGRA calculates further values such as positive-sequence impedances, r.m.s. values, symmetrical components, vectors, etc. Two measuring cursors enable you to measure the fault record quickly and conveniently. Other fault records, e.g. from the remote end of a line, can be added to the existing fault record. A synchronization function makes it possible to synchronize the fault records to a common time basis.

### CFC programming

The SIPROTEC 4 devices incorporate a PLC (Programmable Logic Controller), in which factory-preset standard interlockings are executed. If you wish to modify and adapt them, you use the CFC Editor, which is available as a component in DIGSI 4 Professional. Thanks to its fully graphical user interface, even users without programming knowledge are able to make full and flexible use of the PLC's wide range of possibilities. All items of information which have been configured to "CFC" in the allocation matrix before can be "interconnected" with function blocks here. Once installed, the editor familiar from the SIMATIC world presents itself with a SIPROTEC-specific block library, which does not only provide standard operators such as "AND", but also more complex functions such as "TIMER". A sophisticated consistency check ensures error-free configuration and reliable operation of the protection relay functions.

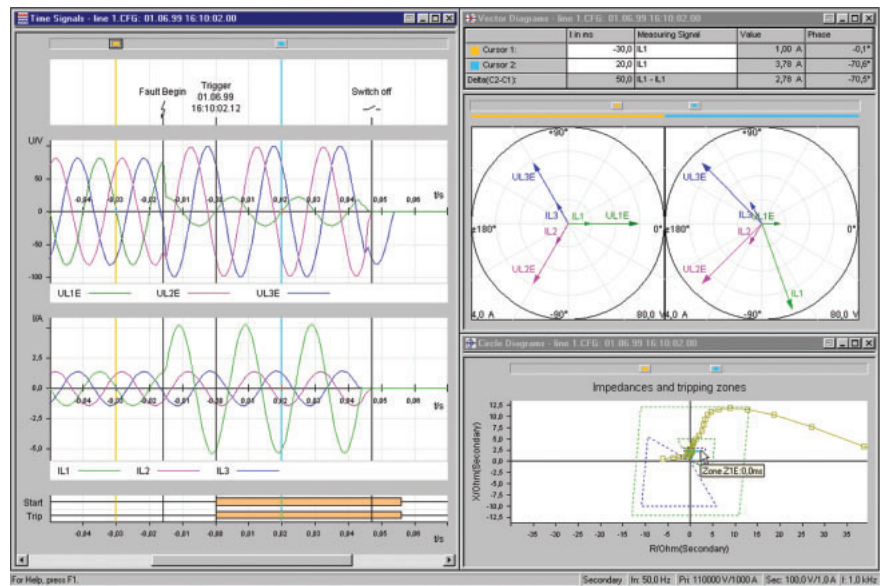


Fig. 3/4 Exact visualization and evaluation of fault records with SIGRA

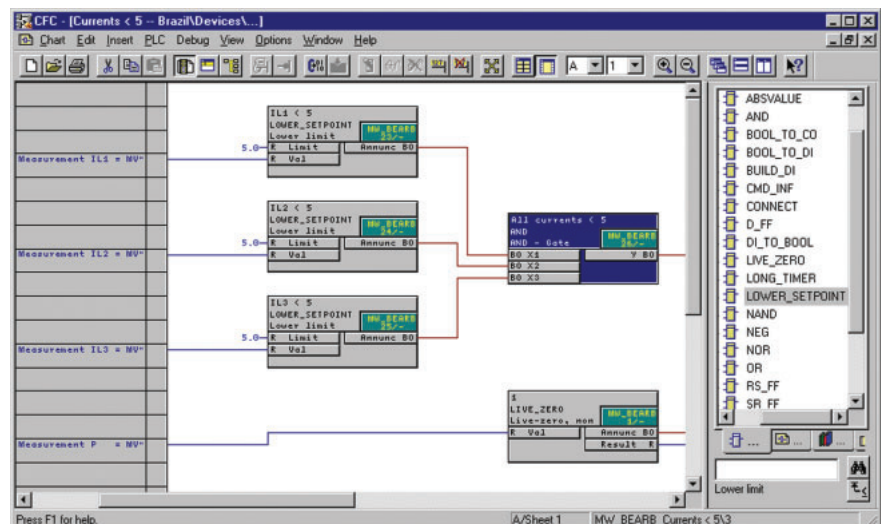


Fig. 3/5 Fully graphic programming, no programming skills required

Functions

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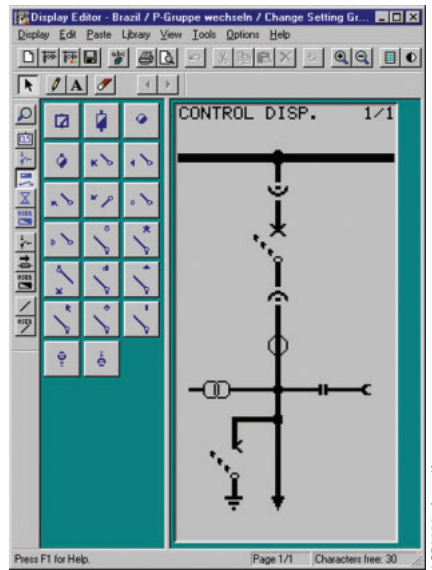


Fig. 3/6 Quick and easy change of device displays like with a conventional image editor

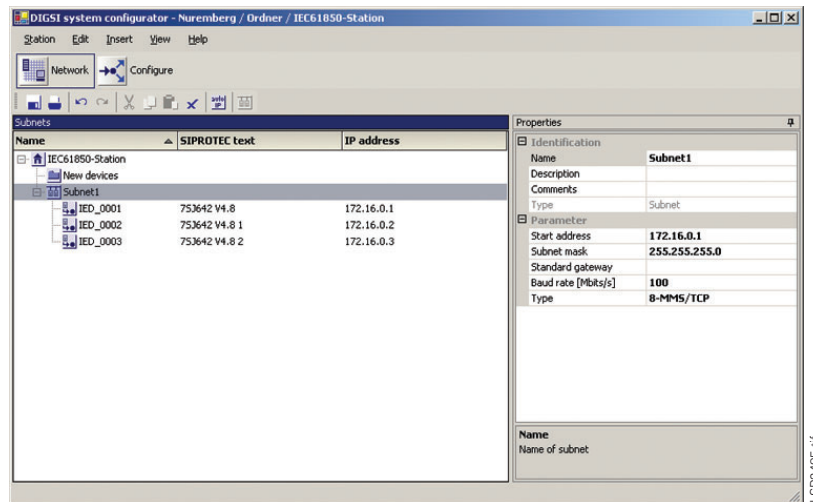


Fig. 3/7 All IEC 61850 information at a glance: Subnets, communicators, IP addresses...

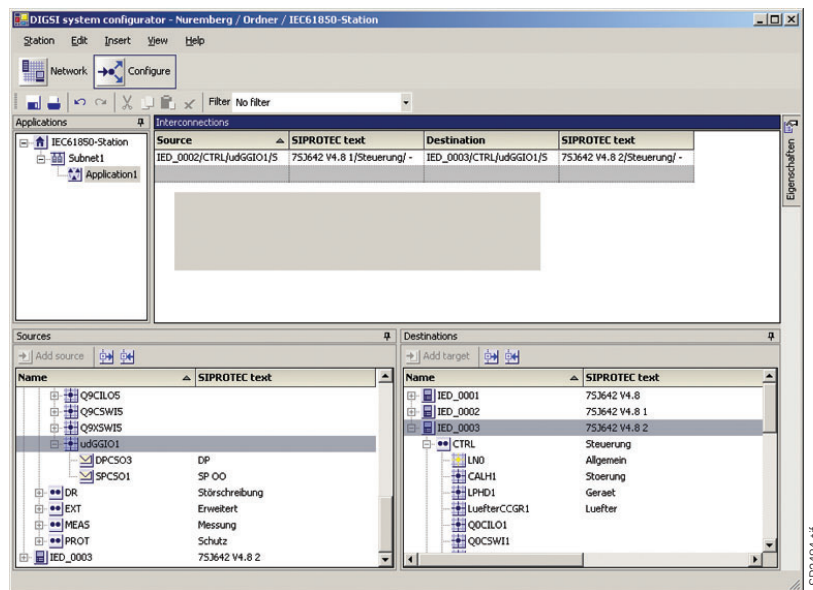


Fig. 3/8 Convenient connection of information between the IEC 61850 communicators

## Selection and ordering data

Description	Order No.
<i>DIGSI 4</i>	
Software for configuration and operation of Siemens protection units Running under MS Windows 2000 / XP Professional Edition	
Includes:	
Device templates	
Comtrade Viewer	
“Getting started” manual (paper)	
Serial DIGSI connecting cables (for all devices)	
Incl. service (upgrade, update, Hotline, newsletter)	
Operating languages:	
English, German, French, Spanish, Italian, Chinese and Russian (selectable)	
Basis	
License for 10 computers, on CD-ROM (authorization by serial number)	7XS5400-0AA00
Scope of delivery includes:	
Cable between PC/notebook (9-pin connector) and protection unit (9-pin connector)	7XV5100-4
Adaptor 9-/25-pin for 7XV5100-4 cable for protection unit with 25-pin connector	7XV5100-8H
Demo	
Multimedia presentation with operation videos (tutorial part) On CD-ROM	E50001-U321-A170-V1-7600
Professional	
DIGSI 4 Basis – without IEC 61850 System Configurator	
+ SIGRA (fault record analysis)	
+ CFC Editor (logic editor)	
+ Display Editor	
+ DIGSI 4 Remote	
License for 10 computers, on CD-ROM	7XS5402-0AA00
Scope of delivery includes:	
Cable between PC/notebook (9-pin connector) and protection unit (9-pin connector)	7XV5100-4
Adaptor 9-/25-pin for 7XV5100-4 cable for protection unit with 25-pin connector	7XV5100-8H
DIGSI 4 Professional + IEC 61850	
Professional and additional IEC 61850 System Configurator	
License for 10 computers, but only for licenses of DIGSI 4 Basis on CD-ROM	7XS5403-0AA00
Upgrade Basis → Professional	
Like “DIGSI 4 Professional”, but only for DIGSI 4 licensees	7XS5407-0AA00
Upgrade Basis → Professional + IEC 61850	
License for 10 computers, but only for licensees of DIGSI 4 Basis, on CD-ROM	7XS5408-0AA00
DIGSI 4 Scientific	
Like “DIGSI 4 Professional”, but only for universities and research institutes, on CD-ROM	7XS5402-2AA00
DIGSI 4 you – Partner for Life	
Multimedia presentation of all features, on CD-ROM	E50417-A1174-C328
DIGSI 4 you – Start up	
Tutorial step-by-step introduction, on CD-ROM	E50417-A1174-C329
DIGSI 4 Copy	
Duplicate for 10 x licenses up to 9 copies per license may be ordered	7XS5490-0AA00

## Selection and ordering data

Description	Order No.
<p><b>SIGRA 4</b></p> <p>Software for graphical visualization, analysis and evaluation of fault records Running under MS Windows 2000 / XP Professional Edition</p> <p>Includes: Fault record templates Electronic manual (PDF) Detailed and step-by-step introduction, on separate CD-ROM</p> <p>SIGRA 4 applicable with or without DIGSI for Comtrade records; also applicable for devices of other manufacturers</p> <p>License for 10 computers, on CD-ROM (authorization by serial number)</p>	<a href="#">7XS5410-0AA00</a>
<p>Trial</p> <p>Trial version (for test purposes; limited to 30 days) On CD-ROM</p>	<a href="#">7XS5411-1AA00</a>
<p><b>DIGSI 4 Remote</b></p> <p>Software for remote control of Siemens protection units via modem (and star coupler, if necessary) Running under MS Windows 2000 / XP Professional Edition</p> <p>Includes: Electronic manual (PDF)</p> <p>Optional package for DIGSI 4 Basis License for 10 computers, on CD-ROM (authorization by serial number)</p>	<a href="#">7XS5440-0AA00</a>
<p><b>IEC 61850 System Configurator</b></p> <p>Software for configuration of stations with IEC 61850 communication protocol. Running under MS Windows 2000 / XP Professional Edition. Optional package for DIGSI 4 Basis or DIGSI 4 Professional. License for 10 computers, on CD-ROM (authorization by serial number)</p>	<a href="#">7XS5460-0AA00</a>
<p><b>Additional service free of charge</b></p> <ul style="list-style-type: none"> <li>• All updates of DIGSI 4</li> <li>• Customer Care Center</li> <li>• DIGSI 4 Notes (quarterly newsletter)</li> <li>• Access to the download area on the Internet at <a href="http://www.siprotec.com">www.siprotec.com</a></li> </ul>	