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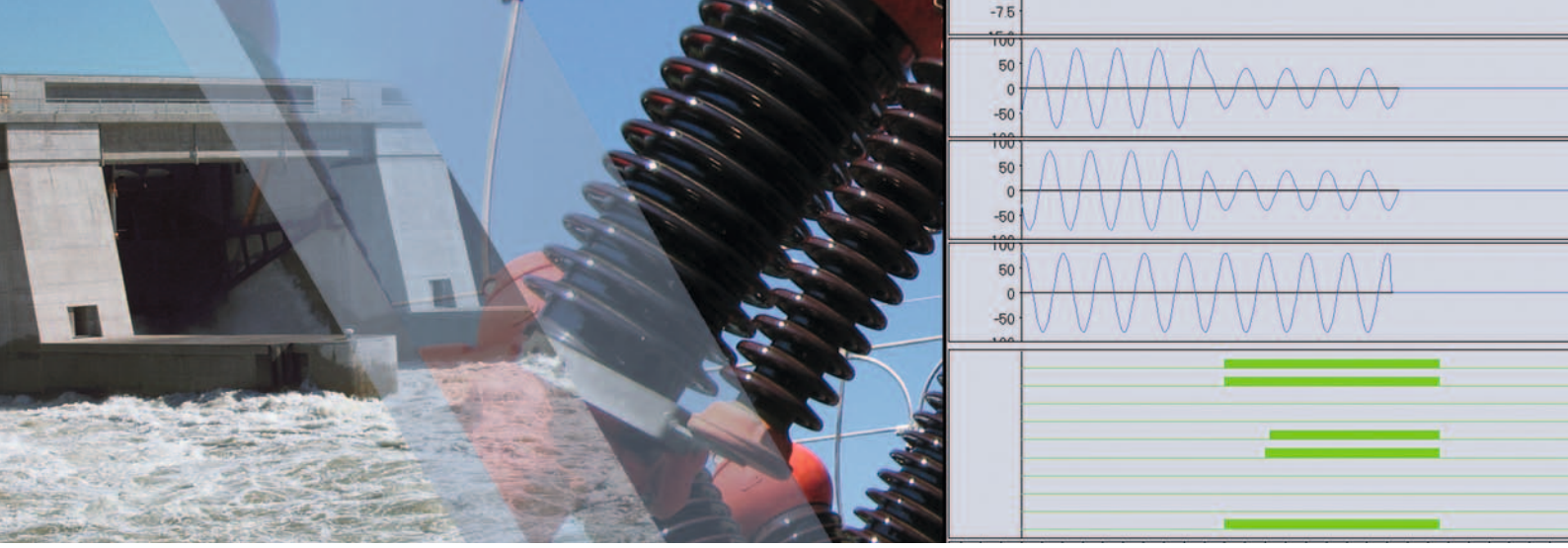
SPRECON®-E-P DS..6-0

Compact Devices for Protection and Control

sprecher automation



SPRECON-E-P DS..6-0

Introduction

With SPRECON-E-P DS6-0 Sprecher Automation offers a compact line of overcurrent-time protection devices. The product line also features a detachable control panel.

The compact SPRECON-E-P DS6-0 protection devices are equipped with standardised hardware modules and use the same firmware of the approved SPRECON-E-P series.

The standard basic functionalities can be extended by packages which include additional protection functions.

Range of Functions

The implemented protection functions allow selective protection as well as main or back-up protection of one-end and two-end-fed lines (underground and overhead lines). The devices also feature motor protection.

Beside protection and collection of measured-values the compact protection devices also control circuit breakers.

Furthermore the SPRECON-E-P DS6-0 devices also support functions such as system decoupling or voltage and frequency protection.

Some extra protection functions such as Q-V< (reactive power-undervoltage protection) and active power direction-dependent FLS (frequency load shedding) are implemented in the firmware as autonomous protection functions.

Extension Packages

- Package 1: Automatic reclosing (AR), teleprotection (TP), intermittent earth-fault
- Package 2: Fault locator (FL), Q-V< protection, voltage/ frequency protection, FLS
- Package 3 = package 1 + package 2
- Package 4 = package 1 + package 2 + synchro-check

Areas of Application

Due to the comprehensive range of implemented protection functions the SPRECON-E-P DS6-0 devices are applicable for most different protection tasks of the energy sector as well as industries.

Because of their specific design, the compact protection devices can be easily installed into various bays – as space-saving as it gets.

Because of the comprehensive extra functions the devices are especially qualified for solutions in the following application fields:

- Industrial switchgears
- Protection devices for utilities (MV)
- Protection devices for utilities (HV) as back-up
- Municipal utilities

Configuration

All functions can be configured separately. By separating protection configuration from control configuration, all different kinds of requirements of different applications can be met.

The protection-specific functions are separately activated or deactivated depending on the respective application.

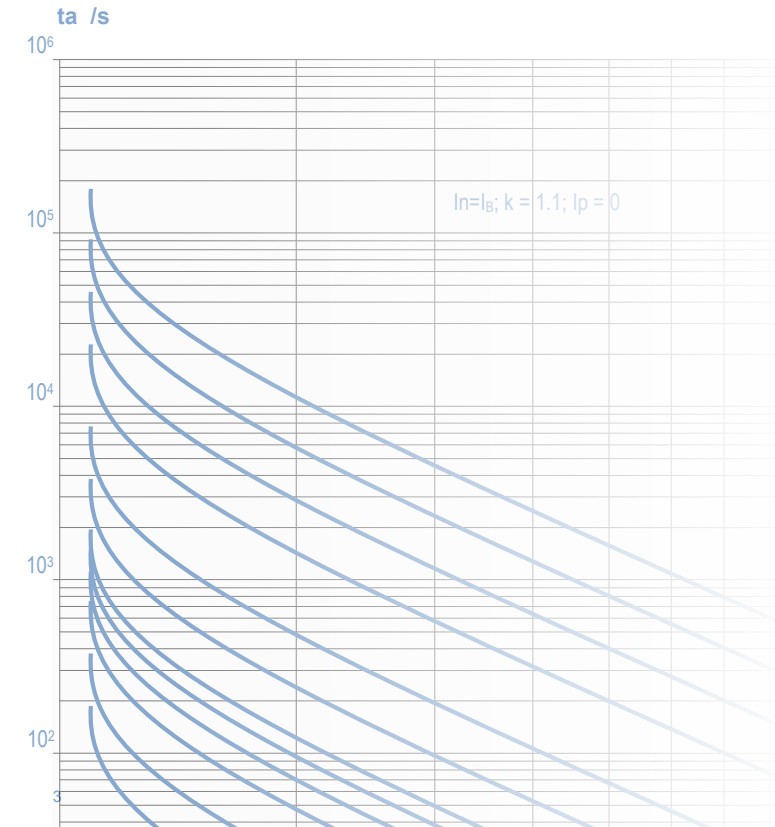
Irrelevant functions are hidden and inactive which allows simple and structured configuration of the devices.

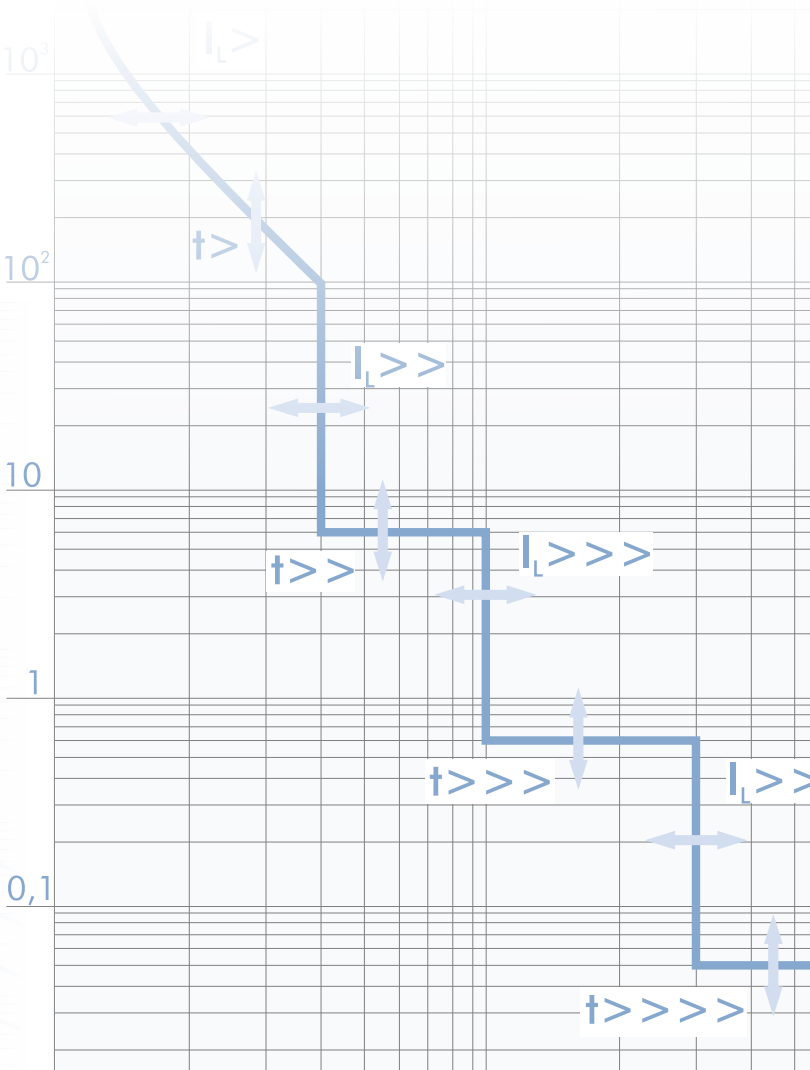
Operating

In order to meet the requirements of efficient system management, all operations can be accomplished with the detachable HMI control panel. Hence, protection configurations can be locally carried out beside usage of the operating program “COMM-3“.

All relevant information about processes and devices is shown on the full-graphical display of the control panel. Additionally, configurable LEDs are available for signalling.

Separated navigation keys allow clear user guidance through the various pages and submenus. Furthermore, they facilitate simple configuration of extensive protection functions.





SPRECON-E-P DS..6-0 – Technical Data (Excerpt)

Dimensions & Weight
- Dimensions: 131x176x160mm (WxHxD) incl. connections
- Weight: < 4kg

General Functions
- Remote maintenance and configuration
- Time synchronisation with DCF77, GPS, station and remote control

Communication
- IEC 60870-5-103/-104, IEC 61850
- RS232, RS422/485, fibre-optic, 10/100 Mbit Ethernet
- 2 additional optical Ethernet interfaces for redundant ring
- Connection via leased or dialup line
- Wireless communication with external modem

Implemented Protection Functions	Reference		Type	
	IEEE C37.2	IEC 61850-7-4	DS6 3 x I_L, 1 x I_E	DSREY6 3 x I_L, 1 x I_E, 4 x U
Basic Functions				
Overcurrent protection				
I_L> DT/IDMT, four stages	50, 51	PIOC, PTOC	x	x
Correction of zero current for I_L > DT/IDMT			x	x
I_E> DT/IDMT, four stages	50N, 51N, 51Ns	PIOC, PTOC	x	x
Differential protection for I_E > DT/IDMT	87N	PDIF	x	x
Switch on protection (SOTF)	50, 50N	PIOC	x	x
Inrush restraint		PHAR	x	x
Short circuit direction decision	67	PTOC, RDIR		x
Directional earth fault	67N	PTOC		x
Phase selective earth fault detection	64	PHIZ		x
Earth fault direction decision (admittance method)	67Ns	PSDE		x
Capture of ext. earth fault direction annunciation		(PTEF, PSDE)	x	x
Directional power protection (P, Q), 2x2 stages	32	PDOP, (PDUP)		x
Negative sequence system I_{neg}>, 2 stages	46	PTOC	x	x
Overload protection for phases/neutral earthing transformer	49, 49N	PTTR	x	x
Starting protection (motor protection) Locked rotor (motor protection)	49R, 66, 48, 51LR	PMRI, PMSS	x	x
Underload-protection (motor protection)	37	PTUC	x	x
Reclosing lockout	86	PMRI	x	x
Circuit breaker failure protection (CBF)	50BF	PTOC, RBRF	x	x
Current annunciation stages (2x $I_{L>an}$, 2x $I_{E>an}$)			x	x
CB-TRIP by an external signal		(PTRC)	x	x
Phase-sequence reversal			x	x
Pulse shaper stage (programmable logic)			x	x
Trip circuit supervision	74TC		x	x
Parameter sets			4	4
Logic + time stages for optocoupler inputs			x	x
Virtual binary inputs/control inputs			15/15	15/15
Logic + hold time for output relays			x	x
Measurands, short report			x	x
Event logging, non-volatile		RDRE	x	x
Disturbance data recording, non-volatile		RADR, RBDR	x	x
Statistics			x	x
Measurand checks, self supervision			x	x
Assistance for test and putting into operation			x	x
In-/Outputs				
Binary inputs			15	15
Binary outputs			14	14
Extension Package 1				
Automatic reclosing (AR), 3-pole	79	RREC	Option	Option
Teleprotection (TP)	85	PSCH	Option	Option
Intermittent earth-fault			Option	Option
Extension Package 2				
Overvoltage (U>, U_{NE}>), two stages each	59, 59N	PTOV		Option
Undervoltage (U<), two stages	27	PTUV		Option
Frequency protection (f< four stages, f>two stages)	81	PTUF, PTOF		Option
Active power direction-dependent frequency load shedding (FLS), six stages				Option
Reactive power-undervoltage protection (Q-V<)				Option
Fault locator (FL)	21FL	RFLO		Option
Extension Package 3 = Package 1 + 2				
Extension Package 4 = Package 1 + 2 +				
Synchro-check	25	RSYN		Option

Additional Protection Functions
- Phase preference for double earth faults
- Pulse shaper stages
- Separation of protection data from control data
- Nominal current selection (1/5 A) via terminal connection
- Settings via control panel and PC through menu-assisted plain-text messaging
- Control and monitoring of switching devices and process elements
- Command output either directly or by SBO (select before operate)
- Configurable logic
- Switching device interlocking
- Signal and measured value blocking
- Average Calculation
- Maximum value calculation (non-return pointer)
- Configurable transmission modes for measured values
- Metered value capturing
- Event recording

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