

## **CONFIGURARE HARDWARE TNP**

# SIEMENS

## SIPROTEC 5

### Configuration

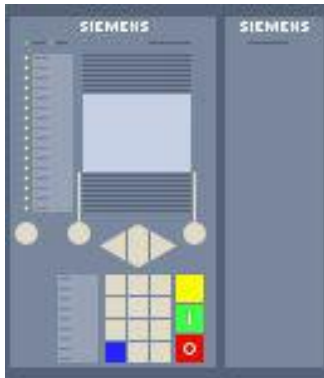
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Device: 7SL86 Diff. / Dist. Prot. 3-p  
2-end protection

Product code

Short: P1C274739

Long: 7SL86-DAAA-AA0-0AAAA0-AN1111-12111A-FBA000-000AC0-CB1BA1-CG0



Firmware:	Current version
Housing width:	1/2 x 19"
Housing type:	Flush mounting
Binary inputs:	27
Binary outputs:	17 Relays (11 Standard, 6 Fast, 0 High-Speed, 0 Power)
Current transformers:	4 for protection, 0 for measurement and sensitive ground-current detection
Voltage transformers:	4
Measuring-transducer inputs:	0 (20 mA or 10 V, fast) 0 (20 mA, standard)
CPU:	CP300
Modules in 19" row 1:	IO202 , PS201 , IO207
Modules in 19" row 2:	
LEDs/Push-buttons:	16 LEDs
Operation Panel:	Integrated
Key switch:	Without
Display type:	Small display
Front Design:	Standard
Power Supply:	DC 60 V-250 V, AC 100 V-230 V

#### Communication/Plug-in modules:

Communications encryption:	Normal
Integrated Ethernet port J:	for DIGSI 5
Plug-in module position E:	USART-AF-1LDFO: 1 x optic serial 24 km, 1300 nm, LC duplex connector, applicable for protection interface
Plug-in module position F:	ETH-BA-2EL: 2 x electric Ethernet, RJ45, applicable for DIGSI, IEC61850, DNP etc.

#### Functions:

Function points class:	Base + 225 function points
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*Note on function-points class*

The function-points class results from the sum of the function points of the selected functions. You can apply these functions as selected. The device allows also each other selection of functions as long as the sum of the required function points is within the selected function-points class. With the maximum function-points class of 1400 it is possible to activate all the functions in the device. The function-points exceeding 1400 are free of charge. In the engineering phase DIGSI 5 checks that the selected configuration is suitable (capable of running in the device) before loading it to the device.

Miscellaneous:

Warranty:	5 years
Firmware:	Current version

Functional scope 7SL86 Diff. / Dist. Prot. 3-p:

ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value =	Points	Result Qty.
	Protection functions for 3-pole tripping	3-pole	✓					✓
	Hardware quantity structure expandable	I/O	✓					✓
21/21N	Distance protection	Z<, V< / I>/(V,I)	1x		x	95 =		1x
21T	Impedance protection for transformers	Z<			x	25 =		
25	Synchrocheck, synchronizing function	Sync			x	60 =		
32, 37	Power protection active/reactive power	P<>, Q<>			x	10 =		
27	Undervoltage protection: "3-phase" or "pos.seq. V1" or "universal Vx"	V<			x	5 =		
	Undervoltage-controlled reactive power protection	Q>/V<			x	15 =		
37	Undercurrent	I<			x	10 =		
38	Temperature Supervision	>	✓					✓
46	Negative sequence overcurrent protection	I2>			x	10 =		
46	Negative sequence overcurrent protection with direction	I2>, (V2,I2)			x	15 =		
47	Overvoltage protection, negative-sequence system	V2>			x	5 =		
49	Thermal overload protection	, I²t			x	10 =		
50N/ 51N TD	Overcurrent protection, ground	IN>	✓					✓
50/51 TD	Overcurrent protection, phases	I>	2x		x	30 =		2x
	Instantaneous tripping at switch onto fault	SOTF	✓					✓
50HS	High speed instantaneous overcurrent protection	I>>>	✓					✓
50N/ 51N TD	Overcurrent protection, 1-phase	IN>	✓					✓
50Ns/ 51Ns	Sensitive ground-current detection for systems with resonant or isolated neutral incl. a) 3I0>, b) admittance Y0>, c) 3I0-harm> (from V7.8)	INs>			x	15 =		

Functional scope 7SL86 Diff. / Dist. Prot. 3-p:

ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value	=	Points	Result Qty.
	Ground-fault detection via pulse pattern detection; Note: this stage additionally requires the function 50Ns/51Ns or 67Ns "Sensitive ground-fault detection for systems with resonant or isolated neutral"	IN-pulse			x	15	=		
	Intermittent ground fault protection	lie>			x	20	=		
50BF	Circuit-breaker failure protection, 3-pole	CBFP			x	15	=		
50RS	Circuit-breaker restrike protection	CBRS			x	20	=		
51V	Voltage dependent overcurrent protection	t=f(I,V)			x	10	=		
59, 59N	Overvoltage protection: "3-phase" or "zero seq. V0" or "pos.seq. V1" or "universal Vx"	V>			x	5	=		
60	Voltage-comparison supervision	U>			x	5	=		
67	Directional overcurrent protection, phases	I>, (V,I)			x	40	=		
67N	Directional overcurrent protection for ground faults in grounded systems	IN>, (V,I)			x	30	=		
67Ns	Dir. sensitive ground-fault detection for systems with resonant or isolated neutral incl. a) 3I0>, b) V0>, c) Cos-/SinPhi, d) Transient fct., e) Phi(V,I), f) admittance				x	30	=		
	Directional stage with a harmonic; Note: this stage additionally requires the function "67Ns Dir. sensitive ground-fault detection for systems with resonant or isolated neutral"	(V0h,I0h)			x	10	=		
	Directional intermittent ground fault protection	lie dir>			x	20	=		
68	Power-swing blocking	Z/t			x	25	=		
74TC	Trip circuit supervision	TCS	✓						✓
78	Out-of-step protection	Z/t			x	55	=		
79	Automatic reclosing, 3-pole	AR			x	45	=		
81	Frequency protection: "f>" or "f<" or "df/dt"	f<>; df/dt<>			x	5	=		

Functional scope 7SL86 Diff. / Dist. Prot. 3-p:

ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value	=	Points	Result Qty.
81U	Under Frequency Load Shedding	f<(UFLS)			x	15	=		
	Vector-jump protection	>			x	20	=		
85/21	Teleprotection for distance protection		✓						✓
85/27	Weak or no infeed: Echo and Tripping	WI	✓						✓
85/67N	Teleprotection for directional ground fault protection		✓						✓
86	Lockout		✓						✓
87N T	Restricted ground-fault protection	IN			x	15	=		
87L	Line differential protection for 2 line ends	I	✓						✓
87L	Line differential protection for 3 to 6 line ends (dependent on Significant properties)	I	✓						✓
87L/ 87T	Option for line differential protection: including power transformer	I			x	100	=		
	Option for line differential protection:charging-current compensation	I			x	40	=		
	Broken-wire detection for differential protection		✓						✓
87 STUB	STUB Differential protection (for one-and-half circuit-breaker applications)				x	35	=		
90V	Automatic voltage control for 2 winding transformer				x	150	=		
90V	Automatic voltage control for 3 winding transformer				x	200	=		
90V	Automatic voltage control for grid coupling transformer				x	175	=		
FL	Fault locator, single-ended measurement	FL-one	1x		x	25	=		1x
PMU	Synchrophasor measurement (1 PMU can be used for max. 8 voltages and 8 currents)	PMU			x	40	=		
AFD	Arc-protection (only with plug-in module ARC-CD-3FO)		✓						✓

ANSI	Function	Abbr.	Always included	Add selected Qty.	x Value = Points	Result Qty.
	Measured values, standard		✓			✓
	Measured values, extended: Min, Max, Avg			x 12 =		
	Switching statistic counters		✓			✓
	Circuit breaker wear monitoring	Ix, I²t, 2P		x 10 =		
	CFC (Standard, Control)		✓			✓
	CFC arithmetic			x 40 =		
	Switching sequences function			x 5 =		
	Inrush current detection		✓			✓
	External trip initiation		✓			✓
	Control		✓			✓
	Fault recording of analog and binary signals		✓			✓
	Monitoring and supervision		✓			✓
	Protection interface, serial		✓			✓
	Circuit Breaker		4x	x 3 =		4x
	Disconnecter		4x	x 3 =		4x
	Region France: Overload protection for lines and cables 'PSL-PSC'			x 10 =		
	Region France: Overcurrent protection 'MAXI-L'			x 10 =		
	Region France: Net decoupling protection 'PDA'			x 10 =		
	Region France: Overload protection for transformers			x 10 =		
	Frequency Tracking Groups (from V7.8)		✓			✓
	Cyber Security: Role Base Access Control (from V7.8)			x 25 =		
	Temperature acquisition via communication protocol		✓			✓
Sum:						0