

# SIEMENS

## SIPROTEC 5

### Configuration

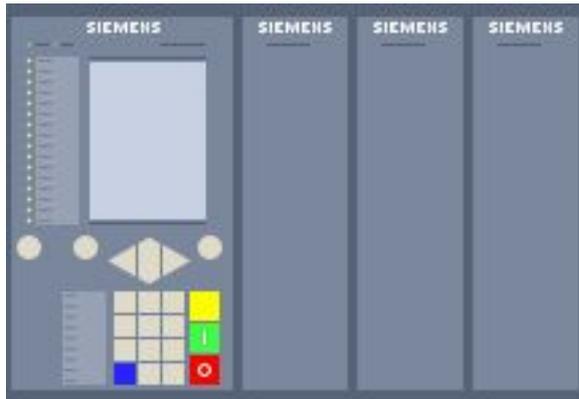
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Device: 7UT85 Transf. Prot (2 Wind.)

Product code

Short: P1F390532

Long: 7UT85-DAAA-AA0-0AAAA0-AM0111-13111A-DCDCAA-AAAAC0-CC5BA1-CL0CG0-BB1



Firmware:	Current version
Housing width:	5/6 x 19"
Housing type:	Flush mounting
Binary inputs:	31
Binary outputs:	15 Relays (11 Standard, 4 Fast, 0 High-Speed, 0 Power)
Current transformers:	6 for protection, 2 for measurement and sensitive ground-current detection
Voltage transformers:	8
Measuring-transducer inputs:	0 (20 mA or 10 V, fast) 4 (20 mA, standard)
CPU:	CP300
Modules in 19" row 1:	IO203 , PS201 , IO211 , IO207 , CB202
Modules in 19" row 2:	
LEDs/Push-buttons:	16 LEDs
Operation Panel:	Integrated
Key switch:	Without
Display type:	Large display
Front Design:	Standard
Power Supply:	DC 60 V-250 V, AC 100 V-230 V
<u>Communication/Plug-in modules:</u>	
Communications encryption:	Normal
Integrated Ethernet port J:	for DIGSI 5
Plug-in module position E:	USART-AD-1FO: 1 x optic serial 2 km, 820 nm, ST connector, for serial protocols, e.g. IEC60870-5-103, DNP3.0 etc. and protection interface
Plug-in module position F:	ARC-CD-3FO: Arc Protection module for the connection of up to 3 optical sensors The arc protection module ARC-CD-3FO cannot be used in the following devices: 7SS8, 7KE8
Plug-in module position M:	ANAI-CA-4EL: 4 Analog inputs 20 mA, screw terminals
Plug-in module position N:	Port is available but not assembled
Plug-in module position P:	Port is available but not assembled

#### Functions:

Function points class: Base + 200 function points

#### *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 7UT85 Transf. Prot (2 Wind.):

ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value =	Points	Result Qty.
	Hardware quantity structure expandable	I/O	✓					✓
	Process Bus Client Protocol (Note: This function requires at least one dedicated ETH-BD-2FO plug-in module, with V8.0)	PB client			x	100 =		
	IEC61850-9-2 Merging Unit stream (Note: This function requires a dedicated ETH-BD-2FO per stream, with V8.0)	MU			x	200 =		
21/21N	Distance protection	Z<, V< / I>/(V,I)			x	100 =		
21T	Impedance protection for transformers	Z<			x	25 =		
24	Overexcitation protection	V/f			x	25 =		
25	Synchrocheck, synchronization function	Sync			x	50 =		
32, 37	Power protection active/reactive power	P<>, Q<>			x	10 =		
27	Undervoltage protection: "3-phase" or "positive-sequence system V1" or "universal Vx"	V<		1	x	5 =	5	1x
	Undervoltage-controlled reactive power protection	Q>/V<			x	5 =		
32R	Reverse-power protection	- P<	2x		x	5 =		2x
37	Undercurrent	I<	✓					✓
37	Power-plant disconnection protection	-dP			x	50 =		
38	Temperature supervision	>	✓					✓
46	Negative-sequence overcurrent protection	I2>		1	x	5 =	5	1x
46	Unbalanced-load protection (thermal)	I2² t>			x	5 =		
47	Overvoltage protection, negative-sequence system	V2>			x	5 =		
47	Overvoltage protection, negative-sequence/positive-sequence system	V2/V1>			x	5 =		
49	Thermal overload protection	, I²t	✓					✓
49	Thermal overload protection, user-defined characteristic	, I²t	✓					✓

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ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value =	Points	Result Qty.
49H	Hot spot calculation	h, I <sup>2</sup> t			x	20 =		
50N/ 51N TD	Overcurrent protection, ground	IN>	✓					✓
50/51 TD	Overcurrent protection, phases	I>	3x		x	30 =		3x
	Instantaneous tripping at switch onto fault	SOTF			x	10 =		
50HS	Instantaneous high-current tripping	I>>>	✓					✓
50/51 TD	Overcurrent protection with positive-sequence current I1 (from V7.9)	I1>	✓					✓
50N/ 51N TD	Overcurrent protection, 1-phase	IN>	✓					✓
50Ns/ 51Ns	Sensitive ground-current detection for systems with resonant or isolated neutral systems incl. a) 3I0>, b) admittance Y0>, c) 3I0-harm> (from V7.8)	INs>			x	5 =		
	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		1	x	5 =	5	1x
50RS	Circuit-breaker restrike protection	CBRS			x	20 =		
51V	Overcurrent protection, voltage dependent	t=f(I,V)			x	10 =		
59, 59N	Overvoltage protection: "3-phase" or "zero-sequence system V0" or "universal Vx"	V>		1	x	5 =	5	1x
59	Overvoltage protection: "3-phase" or "positive-sequence system V1" or "universal Vx"	V>		1	x	5 =	5	1x
60	Voltage-comparison supervision	U>			x	5 =		
67	Directional overcurrent protection, phases	I>, (V,I)		1	x	5 =	5	1x

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#### Functional scope 7UT85 Transf. Prot (2 Wind.):

ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value =	Points	Result Qty.
67N	Directional overcurrent protection for ground faults in grounded systems	IN>, (V,I)			x	30 =		
67N	Directional overcurrent protection, ground	IN>, (V,I)			x	15 =		
67Ns	Dir. sensitive ground-fault detection for systems with resonant or isolated neutral incl. a) 3I0>, b) V0>, c) Cos-/SinPhi, d) Transient ground-fault fct., e) Phi(V,I), f) admittance			1	x	30 =	30	1x
	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	✓					✓
74CC	Closed-circuit supervision (from V7.9)	CCS	✓					✓
79	Automatic reclosing, 3-pole	AR			x	45 =		
81	Frequency protection: "f>" or "f<" or "df/dt"	f<>; df/dt<>			x	5 =		
81U	Underfrequency load-shedding	f<(UFLS)			x	15 =		
85/21	Teleprotection for distance protection		✓					✓
85/27	Weak or no infeed: echo and tripping	WI	✓					✓
81 AF	Abnormal frequency protection	fBand			x	15 =		
	Vector-jump protection	>			x	20 =		
85/67N	Teleprotection for directional ground fault protection		✓					✓
86	Lockout		✓					✓
87T	Transformer differential protection	I	✓					✓
87T	Differential protection for special transformers	I			x	150 =		
87T Node	Differential protection (Node protection for auto transformer)	I Node	✓					✓

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ANSI	Function	Abbr.	Always included	Add selected Qty.	x Value =	Points	Result Qty.
87T	Transformer differential protection for phase angle regulating transformer (single core)	I			x 200 =		
87N T	Restricted ground-fault protection	IN			x 15 =		
87M	Motor differential protection	I	✓				✓
87G	Generator differential protection	I			x 50 =		
87L	Differential protection for lines with 2 ends for 7UT8 (communication with 7SD82,85,86, 7SL86,87)	I			x 170 =		
	Option for line differential protection charging-current compensation	I			x 40 =		
87 STUB	Stub-fault differential protection (for breaker-and-a-half scheme)				x 35 =		
90V	Automatic Voltage controller for two-winding transformer				x 150 =		
90V	Automatic Voltage controller for two-winding transformer with parallel operation				x 180 =		
	Number of two-winding transformers with parallel operation (Note: only together with the function "Automatic Voltage controller for two-winding transformer with parallel operation")		2x		x 5 =		2x
90V	Automatic Voltage controller for three-winding transformer				x 200 =		
90V	Automatic Voltage controller for grid coupling transformer				x 175 =		
FL	Fault locator, single-sided	FL-one			x 25 =		
FL	Fault locator plus (from V7.9)	FL plus			x 45 =		
PMU	Synchrophasor measurement (1 PMU transmits up to max. 8 voltages and 8 currents)	PMU			x 40 =		
AFD	Arc-protection (only with plug-in module ARC-CD-3FO)		✓				✓
	Measured values, standard		✓				✓

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ANSI	Function	Abbr.	Always included	Add selected Qty.	x	Value =	Points	Result Qty.
	Measured values, extended: Min, Max, Avg				x	3 =		
	Switching statistic counters		✓					✓
	Circuit-breaker wear monitoring	Ix, I²t, 2P		1	x	10 =	10	1x
	CFC (Standard, control)		✓					✓
	CFC arithmetic				x	40 =		
	Switching sequences function				x	5 =		
	Inrush current detection		✓					✓
	External trip initiation		✓					✓
	Control		✓					✓
PoW	Point-on-Wave Switching (from V7.9)	PoW			x	425 =		
	Fault recording of analog and binary signals		✓					✓
	Monitoring and supervision		✓					✓
	Protection interface, serial		✓					✓
	Circuit-breaker		4x		x	3 =		4x
	Disconnecter/Grounding switch		4x		x	3 =		4x
	Transformer side 7UT85		2x		x	70 =		2x
	Frequency-tracking groups (from V7.8)		✓					✓
	Temperature acquisition via communication protocol		✓					✓
	Cyber Security: Role-Based Access Control (from V7.8)				x	25 =		
							Sum:	70