ANSI	Function	Abbr.	Available	Application Templates		
				1	2	3
37	Undercurrent	I<	■			
38	Temperature supervision	θ>	■			
46	Negative-sequence system overcurrent protection	I2>	■			
46	Unbalanced-load protection (thermal)	$I2^2$ t>	■			
49	Thermal overload protection	θ, I^2t	■	■	■	■
49	Thermal overload protection, user-defined characteristic curve	θ, I^2t	■			
49H	Hotspot calculation	θh, I^2t	■			
50/51 TD	Overcurrent protection, phases	I>	■	■	■	■
	Instantaneous tripping at switch onto fault	SOTF	■			
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, ground	IN>	■		■	
50N/ 51N TD	Overcurrent protection, 1-phase	IN>	■			
50 Ns/ 51Ns	Sensitive ground-fault detection for grounded arc suppression coils and isolated power systems including a) 3I0> b) admittance Y0>, c) 3I0-harm> (from V7.8)	INs>	■			
	Intermittent ground-fault protection	IIE>	■			
50BF	Circuit-breaker failure protection, 3-pole	CBFP	■		■	
50RS	Circuit breaker restrike monitoring	CBRM	■			
74TC	Trip-circuit supervision		■	■	■	■
74CC	Single circuit monitoring (from V7.9)		■			
86	Lockout		■	■	■	■
87T	Transformer Differential Protection	ΔI	■	■	■	
87T Node	Differential protection (nodal point protection for auto transformer)	ΔI nodes	■			
87T	Differential protection for phase-angle regulating transformers (single core)	ΔI	■			
87N T	Restricted ground-fault protection	ΔIN	■		■	
87M	Differential motor protection	ΔI	■			■
87G	Generator differential protection	ΔI	■			
AFD	Arc protection (only with plug-in module ARC-CD-3FO)		■			
	Measured values, standard		■	■	■	■
	Measured values, extended: Min, max, average		■			
	Switching statistics counter		■	■	■	■
	PQ – Basic measured values: THD (Total Harmonic Distortion) and harmonic component (starting with V8.01) and THD voltage average values (starting with V8.40)		■			
	PQ – Basic measured values: Voltage unbalance (starting with V8.40)		■			
	PQ – Basic measured values: Voltage changes – monitoring of voltage dips, overvoltages and voltage interruptions (starting with V8.40)		■			
	PQ – Basic measured values: TDD - Total Demand Distortion (starting with V8.40)		■			
	CFC (standard, control)		■	■	■	■
	CFC arithmetic		■			
	Circuit-breaker wear monitoring	Σlx, I^2t, 2P	■			
	Switching sequence function		■			
	Inrush-current detection		■	■	■	■
	External trip initiation		■			

ANSI	Function	Abbr.	Available	Application Templates		
				1	2	3
	Control		■	■	■	■
	Circuit breaker		■	■	■	■
	Disconnector/grounding conductor		■			
	Fault recording of analog and binary signals		■	■	■	■
	Monitoring		■	■	■	■
	Protection interface, serial		■			
	Frequency group tracking (from V7.8)		■			
	Cyber security: Role-Based Access Control (from V7.8)		■			
	Temperature recording via communication protocol		■			
	Cyber security: Authenticated network access using IEEE 802.1X (starting from V8.3)		■			
Function point class:				0	30	0
The configuration and function point class for your application can be determined in the SIPROTEC 5 order configurator at www.siemens.com/siprotec.						

Table 2.11/2 SIPROTEC 7UT82 – Functions, Application Templates

(1) 2-Winding Transformer Base (DIFF protection)

(2) 2-Winding Transformer (DIFF protection, SVS, REF)

(3) Motor (DIFF protection)

Standard Variant for SIPROTEC 7UT82		
W1	1/3, 7 BI, 7 BO, 8 I	
	Housing width 1/3 x 19"	
	7 binary inputs	
	7 binary outputs (1 life contact, 6 standard)	
	8 current transformers	
	Contains the following modules: Base module with PS101 and IO103	

Table 2.11/3 Standard Variants for Transformer Differential Protection Devices

You can find the technical data of the devices in the manual
www.siemens.com/siprotec.

7UT82 Transformer Differential Protection - Overview Function points calculation

(P1F33655)

Functions Free of Charge

ANSI	Function	Abbr.	Included
	Protection functions for 3-pole tripping	3-pole	✓
37	Undercurrent	I<	✓
38	Temperature supervision	θ>	✓
49	Thermal overload protection	θ, I^2t	✓
49	Thermal overload protection, user-defined characteristic	θ, I^2t	✓
50HS	Instantaneous high-current tripping	I>>>	✓
50/51 TD	Overcurrent protection with positive-sequence current I1 (from V7.9)	I1>	20 X ✓
50N/ 51N TD	Overcurrent protection, ground	IN>	✓
50N/ 51N TD	Overcurrent protection, 1-phase	IN>	✓
74TC	Trip-circuit supervision	TCS	✓
74CC	Closed-circuit supervision (from V7.9)	CCS	✓
86	Lockout		✓
87T	Transformer differential protection	ΔI	✓
87T Node	Differential protection (Node protection for auto transformer)	ΔI Node	✓
87M	Motor differential protection	ΔI	✓
AFD	Arc-protection (only with plug-in module ARC-CD-3FO)		✓
	Measured values - standard		✓
	Switching statistic counters		✓
	PQ-Basic measured values: THD (Total Harmonic Distortion) and harmonics (from V8.01) THD voltage aggregation values (from V8.40)		✓
	CFC (Standard, control)		✓
	Switching sequences function		✓

	Inrush current detection		✓
	External trip initiation		✓
	Control		✓
	Protection interface, serial		✓
	Monitoring and supervision		✓
	Fault recording of analog and binary signals		✓
	Frequency-tracking groups (from V7.8)		6 X ✓
	Temperature acquisition via communication protocol		✓

Functions with Costs

ANSI	Function	Abbr.	Included	Quantity	Value	Points
46	Negative-sequence overcurrent protection	I2>		0	5	0
46	Unbalanced-load protection (thermal)	$I2^2$ t>		0	5	0
46	Negative-sequence overcurrent protection with direction			0	15	0
49H	Hot spot calculation	θh, I^2t		0	20	0
50/51 TD	Overcurrent protection, phases	I>	3 X ✓	0	30	0
	Instantaneous tripping at switch onto fault	SOTF		0	10	0
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>		0	5	0
	Intermittent ground-fault protection	Iie>		0	20	0
50BF	Circuit-breaker failure protection, 3-pole	CBFP		0	5	0
50RS	Circuit-breaker restrike protection	CBRS		0	20	0

87T	Transformer differential protection for phase angle regulating transformer (single core)	ΔI		0	200	0
87N	Restricted ground-fault protection	ΔIN		0	15	0
87G	Generator differential protection	ΔI		0	50	0
	Measured values - extended: Min, Max, Avg			0	3	0
	PQ-Basic measured values: Voltage unbalance (from V8.40)			0	20	0
	PQ-Basic measured values: Voltage variations - voltage dips, swells and interruptions (from V8.40)			0	30	0
	PQ-Basic measured values: TDD - Total Demand Distortion (from V8.40)			0	10	0
	CFC arithmetic			0	40	0
	Circuit-breaker monitoring (from V9.20)	ΣIx, I^2t, 2P, tO, tC, pole scatter, discepancy		0	10	0
	Disconnector monitoring (from V9.50)	tO, tC		0	5	0
	Circuit-breaker		4 X ✓	0	3	0
	Disconnector/Grounding switch		4 X ✓	0	3	0
	Multiplexing of protection interface			0	50	0
SSR	Slow-scan recorder (Mod.: from V8.80, Non-Mod.: from V9.40)	SSR	1 X ✓	0	40	0
CR	Continuous recorder (Mod.: from V9.20, Non-Mod.: from V9.40)	CR	1 X ✓	0	25	0
TR	Trend recorder (Mod.: from V9.30, Non-Mod.: from V9.40)	TR	1 X ✓	0	25	0
	Cyber Security: Role-Based Access Control (from V7.8)			0	25	0
	Cyber Security: IEEE 802.1x based network authentication (from V8.3)			0	10	0

Total:	0