Generator Protection
SIPROTEC 7UM621, 7UM622, 7UM623

Product description	Variants	Order No.

Multifunction generator / motor and transformer protection relay

1	2	3	4	5	6	7		8	9	10	11	12		13	14	15	16	Short code		
7	U	M	6	2	□	□	-	□	□	□	□	□	-	□	□	□	0	□	□	□

Housing, binary inputs binary outputs																				
Housing 1/2 19”; 7 BI, 12 BO, 1 Life contact						1														
Housing 1/1 19”; 15 BI, 20 BO, 1 Life contact						2														
Grafic display, Housing 1/2 19”; 7 BI, 12 BO, 1 Life contact						3														
CT inputs																				
1 A [1], Iee (sensitive)							1													
5 A [1], Iee (sensitive)							5													
AC/DC supply voltage (threshold binary inputs)																				
DC 24 V to 48 V, threshold binary input 19 V								2												
DC 60 V to 125 V [2], threshold binary input 19 V [3]								4												
DC 110 V to 220 V [2], AC 115/230 V, threshold binary input 88 V [3]								5												
DC 220 V to 250 V [2], AC 115/230 V threshold binary input DC 176 V [3]								6												
Construction																				
Surface-mounting housing, terminals on top and bottom 7UM621									B											
Surface-mounting housing, terminals on top and bottom 7UM622									B											
Flush-mounting housing, plug-in termin									D											
Flush-mounting housing, screw terminals									E											
(direct connecting /ring-type cable lugs)																				
Regional Presettings/ Regional functions and languages																				
Region DE, 50 Hz, IEC, language German (language changeable)										A										
Region World, 50/60 Hz, IEC/ANSI, language English (language changeable)										B										
Region US, 60 Hz, ANSI, language US-English (language changeable)										C										
System interfaces Port B (system port on rear)																				
No system interface											0									
IEC 60870-5-103 Protocol, electric RS232											1									
IEC 60870-5-103 Protocol, electrical RS485											2									
IEC 60870-5-103 Protocol, 820 nm fibre optic, ST-connector											3									
Analog outputs 2 x 0 ... 20 mA											7									
Further protocols see supplement L											9							L	□	□
PROFIBUS DP Slave, RS485																		0	A	
PROFIBUS DP Slave, 820 nm fibre optic, double loop, ST –plug [4]																		0	B	
Modbus, RS485																		0	D	
Modbus, 820 nm fibre optic, ST -plug [5]																		0	E	
DNP3, electrical RS485																		0	G	
DNP3, 820 nm fibre optic, ST -plug [5]																		0	H	
IEC 61850, 100 Mbit Ethernet, electrical, double RJ45-plugs																		0	R	
IEC 61850, 100 Mbit Ethernet, with integrated switch																		0	S	
optical, double, LC-connector 5)																				
PROFINET I/O, 100 Mbit Ethernet, electrical, double, RJ45-plugs																		3	R	
PROFINET I/O, 100 Mbit Ethernet, with integrated switch,																		3	S	
optical, double, LC-connector [5]																				

(continued on next page)

1) Rated current 1/ 5 A can be selected by means of jumpers.
2) Transition between the two auxiliary voltage ranges can be selected by means of jumpers.
3) The thresholds of each binary input can be set via bridges.
4) If position 9=B (surface-mounting housing, 2-tier terminals on top/bottom), please order the relay with RS485 interface and separate fibre-optic converter.
5) Not available with position 9=B (surface –mounting).

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Multifunction generator / motor and transformer protection relay		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 Short code 7 U M 6 2 □ □ - □ □ □ □ □ - □ □ □ 0 □ □ □
(continued from previous page)	Only Port C (service interface)	
	DIGSI / Modem RS232	1
	DIGSI / Modem / RTD-Box [2] RS485	2
	Port C and Port D	
	Port C (service interface)	
	DIGSI / Modem RS232	9 — M 1 □
	DIGSI / Modem / RTD-Box [2] electrical RS485	9 — M 2 □
	Port D (additional interface)	
	RTD-Box [2] optical 820 nm, ST-connector	A
	RTD-Box [2] electrical RS485	F
	Analog outputs 2 x 0 ... 20 mA	K
	Measuring functions	
	without additional measuring functions	0
	min./max. values, energy meter	3
	Functionality [1]	
	generator basis	A
	generator standard	B
	generator full	C
	asynchronous motor	F
	transformer	H
	Functionality / Additional functions [1]	
	without	A
	Sensitive rotor earth fault protection (1-3 Hz) and 100%-stator earth fault protection	B
	Earth current differential protection (REF)	C
	Network decoupling (df/dt and vector jump)	E
	All additional functions	G

1) For the functional scope, see the table on next page.
2) RTD-Box 7XV5662-*AD10 (at Accessories).

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Protection functions	Abbreviation	ANSI-No.	Generator Basic	Generator Standard	Generator Full	Motor Asynchronous	Transformer
Current differential protection	ΔI	87G/M/T	X	X	X	X	X
Stator earth-fault protection non-directional, directional	$V_0>$, $3I_0>$ $\angle$ (V_0, $3I_0$)	59N, 64G, 67G	X	X	X	X	X
Sensitive earth-fault protection (also rotor earth-fault protection)	$I_{EE}>$	50/51GN (64R)	X	X	X	X	X
Sensitive earth current protection IEE-B (shaft current protection)	$I_{EEB}>$ $I_{EEB}<$	50/51GN	X	X	X	X	X
Overload protection	I^2t	49	X	X	X	X	X
Definite Overcurrent protection with undervoltage seal-in	I> + V<	51	X	X	X	X	X
Definite Overcurrent protection, directional	I>>, Direc.	50/51/67	X	X	X	X	X
Inverse Overcurrent protection	t=f(I) + V<	51V	X	X	X	X	X
Overvoltage protection	V>	59	X	X	X	X	X
Undervoltage protection	V<, t=f(V)	27	X	X	X	X	X
Frequency protection	f<, f>	81	X	X	X	X	X
Reverse-power protection	- P	32R	X	X	X	X	X
Overexcitation protection (Volt/Hertz)	V/f	24	X	X	X		X
Fuse failure monitor	V_2/V_1; I_1/I_2	60FL	X	X	X	X	X
External trip coupling	Incoup.		4	4	4	4	4
Trip circuit supervision	T.C.S	74TC	X	X	X	X	X
Forward-power protection	P>, P<	32F	X	X	X	X	X
Underexcitation protection	1/xd	40	X	X	X		
Negative sequence protection	$I_2>$, t=f(I_2)	46	X	X	X	X	
Circuit-breaker failure protection	$I_{min}>$	50BF	X	X	X	X	X
Motor starting time supervision	I_{an}^2t	48	X	X	X	X	
Restart inhibit for motors	I^2t	49 Rotor	X	X	X	X	
Rotor earth fault protection (fn, R-measuring)	R<	64R (fn)	X	X	X		
Inadvertent energization protection	I>, V<	50/27		X	X		
100%-stator-earth-fault protection with 3rd harmonics	$U_{0\ (3rdHarm.)}$	59TN, 27TN3.H		X	X		
Impedance protection with (I> + U<)-pick-up	Z<	21		X	X		
Interturn fault protection	$U_{Int}>$	59N (IT)		X	X		
DC-voltage time protection	$V_{dc}>$	59N (DC)			X		
Overcurrent protection during start-up (for gas turbines)	I>	51			X		
Earth-current differential protection	ΔI_e	87GN/TN	X 1)	X 1)	X 1)	X 1)	X 1)
Out of step protection	$\Delta Z/\ \Delta t$	78			X		
Rotor earth fault protection (1-3 Hz square wave voltage)	$R_{REF}<$	64R (1-3 Hz)	X 1)	X 1)	X 1)		
100%-stator-earth-fault protection with 20-Hz-voltage	$R_{SEF}<$	64G (100%)	X 1)	X 1)	X 1)		
Rate of frequency change protection	df/dt	81	X 1)	X 1)	X 1)	X 1)	X 1)
Vector jump supervision (voltage)	$\Delta\varphi>$		X 1)	X 1)	X 1)	X 1)	X 1)
Supervision of phase rotation	A, B, C	47	X	X	X	X	X
Undercurrent via CFC	I<	37	X	X	X	X	X
External temperature monitoring through serial interface	ϑ (RTD)	38	X	X	X	X	X
Threshold supervision			X	X	X	X	X

Option for all function packages.