

# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE pro 3UF7

### General data

#### Technical specifications

General technical specifications		
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60 ; 3UF7 21: 0 ... +60
• Storage and transport	°C	-40 ... +80 ; 3UF7 21: -20 ... +70
<b>Degree of protection (acc. to IEC 60529)</b>		
• Measuring modules with busbar connection		IP00
• Operator panel (front) and door adapter (front) with cover		IP54
• Other components		IP20
<b>Shock resistance (sine pulse)</b>	g/ms	15/11
<b>Mounting position</b>		Any
<b>Frequency</b>	Hz	50/60 ±5 %
<b>Immunity to electromagnetic interference (acc. to IEC 60947-1)</b>		
• Line-induced interference, burst acc. to IEC 61000-4-4	kV	Corresponds to degree of severity 3
	kV	2 (power ports)
	V	1 (signal ports)
• Line-induced interference, high frequency acc. to IEC 61000-4-6	V	10
• Line-induced interference, surge acc. to IEC 61000-4-5	kV	2 (line to earth)
	kV	1 (line to line)
• Electrostatic discharge, ESD acc. to IEC 61000-4-2	kV	8 (air discharge)
	kV	6 (contact discharge); 3UF7 21: 4 (contact discharge)
• Field-related interference acc. to IEC 61000-4-3	V/m	10
<b>Immunity to electromagnetic interference (acc. to IEC 60947-1)</b>		
• Line-conducted and radiated interference emission		EN 55011/ EN 55022 (CISPR 11/CISPR 22) (corresponds to degree of severity A)
<b>Protective separation (acc. to IEC 60947-1, Annex N)</b>		All circuits in SIMOCODE pro are safely separated from each other acc. to IEC 60947-1, they are designed with doubled creepage paths and clearances. In this context, compliance with the instructions in the test report "Protective separation" No. 2668 is required.

### Basic units

#### Control circuit

<b>Rated control supply voltage <math>U_s</math> (acc. to EN 61131-2)</b>		110 ... 240 V AC/DC; 50/60 Hz	24 V DC
<b>Operating range</b>		0.85 ... 1.1 x $U_s$	0.80 ... 1.2 x $U_s$
<b>Power consumption</b>			
• Basic Unit 1 (3UF7 000)		7 VA/5 W	5 W
• Basic Unit 2 (3UF7 010)		10 VA/7 W	7 W
incl. two expansion modules connected to Basic Unit 2			
<b>Rated insulation voltage <math>U_i</math></b>	V	300 (at pollution degree 3)	
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	4	
<b>Relay outputs</b>			
• Number		3 monostable relay outputs	
• Specified short-circuit protection for auxiliary contacts (relay outputs)		• Fuse links, gL/gA operational class 6 A, quick-acting 10 A (IEC 60947-5-1)	
		• Miniature circuit breaker 1.6 A, C characteristic (IEC 60947-5-1)	
		• Miniature circuit breaker 6 A, C characteristic ( $I_k < 500$ A)	
• Rated uninterrupted current	A	6	
• Rated switching capacity		<b>AC-15</b> 6 A/24 V AC      6 A/120 V AC      3 A/230 V AC	
		<b>DC-13</b> 2 A/24 V DC      0.55 A/60 V DC      0.25 A/125 V DC	
<b>Inputs (binary)</b>		4 inputs supplied internally by the device electronics with 24 V DC and connected to a common potential	
<b>Thermistor motor protection (binary PTC)</b>			
• Summation cold resistance	kΩ	≤ 1.5	
• Response value	kΩ	3.4 ... 3.8	
• Return value	kΩ	1.5 ... 1.65	

### Current measuring modules or current/voltage measuring modules

#### Main circuit

		3UF7 1.0	3UF7 1.1	3UF7 1.2
<b>Current setting <math>I_e</math></b>	A	0.3 ... 3	2.4 ... 25	10 ... 100
<b>Rated insulation voltage <math>U_i</math></b>	V	690; 3UF7 103 and 3UF7 104: 1000 (at pollution degree 3)		
<b>Rated operational voltage <math>U_e</math></b>	V	690		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	6; 3UF7 103 and 3UF7 104: 8		
<b>Rated frequency</b>	Hz	50/60		
<b>Type of current</b>		Three-phase current		
<b>Short-circuit</b>		Additional short-circuit protection is required in main circuit		
<b>Accuracy of current measurement (in the range 1 x minimum current setting <math>I_u</math> to 8 x max. current setting <math>I_o</math>)</b>	%	±3		
<b>Typical voltage measuring ranges</b>				
• Phase-to-phase voltage/line-to-line voltage (e. g. $U_{L1 L2}$ )	V	110 ... 690 (only the phase voltages are available in SIMOCODE pro as measured values)		
• Phase voltage (e. g. $U_{L1}$ )	V	65 ... 400		
<b>Accuracy</b>				
• Of voltage measurement (phase voltage $U_L$ in the range 230 ... 400 V)	%	±3 (typical)		
• Of power factor measurement (in the rated load range power factor = 0.4 ... 0.8)	%	±5 (typical)		
• Of apparent power measurement (in the rated load range)	%	±5 (typical)		

# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE pro 3UF7

### General data

#### Current measuring modules or current/voltage measuring modules (continued)

##### Notes on voltage measurement

- In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems
- Feeder lines for voltage measurement

In these networks the current/voltage measuring module can be used only with an upstream decoupling module on the system interface.  
In the feeder lines from the main circuit for voltage measurement of SIMOCODE pro it may be necessary to provide additional line protection!

#### Digital modules

##### Control circuit

<b>Rated insulation voltage <math>U_i</math></b>	V	300 (at pollution degree 3)
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	4
<b>Relay outputs</b>		
<ul style="list-style-type: none"> <li>• Number</li> <li>• Specified short-circuit protection for auxiliary contacts (relay outputs)</li> </ul>		2 monostable or bistable relay outputs (depending on the version) <ul style="list-style-type: none"> <li>• Fuse links, gL/gG operational class 6 A, quick-acting 10 A (IEC 60947-5-1)</li> <li>• Miniature circuit breaker 1.6 A, C characteristic (IEC 60947-5-1)</li> <li>• Miniature circuit breaker 6 A, C characteristic (<math>I_k &lt; 500</math> A)</li> </ul>
<ul style="list-style-type: none"> <li>• Rated uninterrupted current</li> <li>• Rated switching capacity</li> </ul>	A	<b>AC-15</b> 6 A/24 V AC      6 A/120 V AC      3 A/230 V AC <b>DC-13</b> 2 A/24 V DC      0.55 A/60 V DC      0.25 A/125 V DC
<b>Inputs (binary)</b>		4 externally supplied floating inputs, 24 V DC or 110 ... 240 V AC/DC depending on the version; inputs jointly connected to common potential

#### Ground-fault modules

##### Control circuit

<b>Connectable 3UL22 summation current transformer with rated fault currents <math>I_N</math></b>	A	0.3/0.5/1
<ul style="list-style-type: none"> <li>• <math>I_{Ground\ fault} \leq 50\% I_N</math></li> <li>• <math>I_{Ground\ fault} \geq 100\% I_N</math></li> </ul>		No tripping Tripping
<b>Response delay (conversion time)</b>	ms	300 ... 500, additionally delayable

#### Temperature modules

##### Sensor circuit

<b>Typical sensor circuits</b>			
<ul style="list-style-type: none"> <li>• PT100</li> <li>• PT1000/KTY83/KTY84/NTC</li> </ul>	mA	1 (typical)	
	mA	0.2 (typical)	
<b>Open-circuit/short-circuit detection</b>			
<ul style="list-style-type: none"> <li>• For sensor type</li> <li>• Open circuit</li> <li>• Short-circuit</li> <li>• Measuring range</li> </ul>		PT100/PT1000	KTY83-110
		✓	✓
		✓	✓
	°C	-50 ... +500	-50 ... +175
			KTY84
			✓
			✓
	°C		-40 ... +300
<b>Measuring accuracy at 20 °C ambient temperature (T20)</b>	K	< ±2	
<b>Deviation due to ambient temperature (in % of measuring range)</b>	%	0.05 per K deviation from T20	
<b>Conversion time</b>	ms	500	
<b>Connection type</b>		Two- or three-wire connection	

#### Analog modules

##### Control circuit

<b>Inputs</b>			
<ul style="list-style-type: none"> <li>• Channels</li> <li>• Parameterizable measuring ranges</li> <li>• Shielding</li> <li>• Max. input current (destruction limit)</li> <li>• Accuracy</li> <li>• Input resistance</li> <li>• Conversion time</li> <li>• Resolution</li> <li>• Open-circuit detection</li> </ul>	mA	2 (passive) 0/4...20	
		Up to 30 m shield recommended, from 30 m shield required	
	mA	40	
	%	±1	
	Ω	50	
	ms	150	
	bit	12	
		With measuring range 4 ... 20 mA	
<b>Output</b>			
<ul style="list-style-type: none"> <li>• Channels</li> <li>• Parameterizable output range</li> <li>• Shielding</li> <li>• Max. voltage at output</li> <li>• Accuracy</li> <li>• Max. output load</li> <li>• Conversion time</li> <li>• Resolution</li> <li>• Short-circuit proof</li> </ul>	mA	1 0/4...20	
		Up to 30 m shield recommended, from 30 m shield required	
		30 V DC	
	%	±1	
	Ω	500	
	ms	25	
	bit	12	
		Yes	
<b>Connection type</b>		Two-wire connection	
<b>Electrical separation of inputs/output to the device electronics</b>		No	

✓ Detection possible