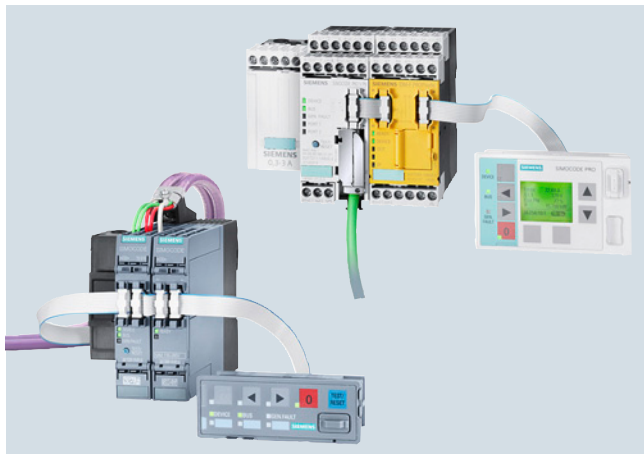


SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Overview



SIMOCODE pro S for efficient entry into motor management and SIMOCODE pro V for maximum functionality

More information

Home page, see www.siemens.com/sirius

Industry Mall, see www.siemens.com/product?3UF7

SIMOCODE pro is a flexible, modular motor management system for motors with constant speeds in the low-voltage performance range. It optimizes the connection between I&C and motor feeder, increases plant availability and allows significant savings to be made for installation, commissioning, operation and maintenance of a system.

When SIMOCODE pro is installed in the low-voltage switch-board, it is the intelligent interface between the higher-level automation system and the motor feeder and includes the following:

- Multifunctional, solid-state full motor protection that is independent of the automation system
- Integrated control functions instead of hardware for the motor control
- Detailed operational, service and diagnostics data
- Open communication through PROFIBUS DP, PROFINET, Modbus RTU and OPC UA
- Safety relay function for the fail-safe disconnection of motors up to SIL 3 (IEC 61508, IEC 62061) or PL e with Category 4 (EN ISO 13849-1)
- SIMOCODE ES is the software package for SIMOCODE pro parameterization, start up and diagnostics.

Device series

SIMOCODE pro is structured into several functionally tiered series:

- SIMOCODE pro C, as a compact system for direct-on-line starters and reversing starters or for controlling a motor starter protector.
- SIMOCODE pro S – the smart system for direct-on-line, reversing, and wye-delta starters or for controlling a motor starter protector or soft starter. Its expandability with a multi-function module provides comprehensive input/output project data volume, precise ground-fault detection via the 3UL23 residual-current transformers and temperature measurement.
- SIMOCODE pro V, as a variable system with all control functions and with the possibility of expanding the inputs, outputs and functions of the system at will using expansion modules.

Expansion possibilities	SIMOCODE pro C PROFIBUS	pro S PROFIBUS	pro V ¹⁾ PROFIBUS ²⁾ Modbus RTU ²⁾	PROFINET
Operator panels	✓	✓	✓	✓
Operator panels with display	--	--	✓	✓
Current measuring modules	✓	✓	✓	✓
Current/voltage measuring modules	--	--	✓	✓
Decoupling modules	--	--	✓	✓
Expansion modules:				
• Digital modules	--	--	2	2
• Fail-safe digital modules ³⁾	--	--	1	1
• Analog module	--	--	1	2
• Ground-fault module	--	--	1	1
• Temperature module	--	--	1	2
• Multifunction modules	--	1	--	--

✓ Available

-- Not available

¹⁾ Maximum of 5 expansion modules.

²⁾ When an operator panel with display and/or a decoupling module are used, more restrictions on the number of expansion modules connectable per basic unit must be observed; see page 10/13.

³⁾ The fail-safe digital module can be used instead of one of the two digital modules.

Per feeder each system always comprises one basic unit and one separate current measuring module. The two modules are connected together electrically through the system interface with a connection cable and can be mounted mechanically connected as a unit (one behind the other) or separately (side by side). The motor current to be monitored is decisive only for the choice of the current measuring module.

An operator panel for mounting in the control cabinet door is optionally connectable through a second system interface on the basic unit. Both the current measuring module and the operator panel are electrically supplied by the basic unit through the connection cable. More inputs, outputs and functions can be added to the SIMOCODE pro V and SIMOCODE pro S by means of optional expansion modules, thus supplementing the inputs and outputs already existing on the basic unit. With the DM-F Local and DM-F PROFIsafe fail-safe digital modules it is also possible to integrate the fail-safe disconnection of motors in the SIMOCODE pro V motor management system.

All modules are connected by connection cables. The connection cables are available in various lengths. The maximum distance between modules (e.g. between the basic unit and the current measuring module) must not exceed 2.5 m. The total length of all the connection cables per system interface of the basic unit may be up to 3 m.

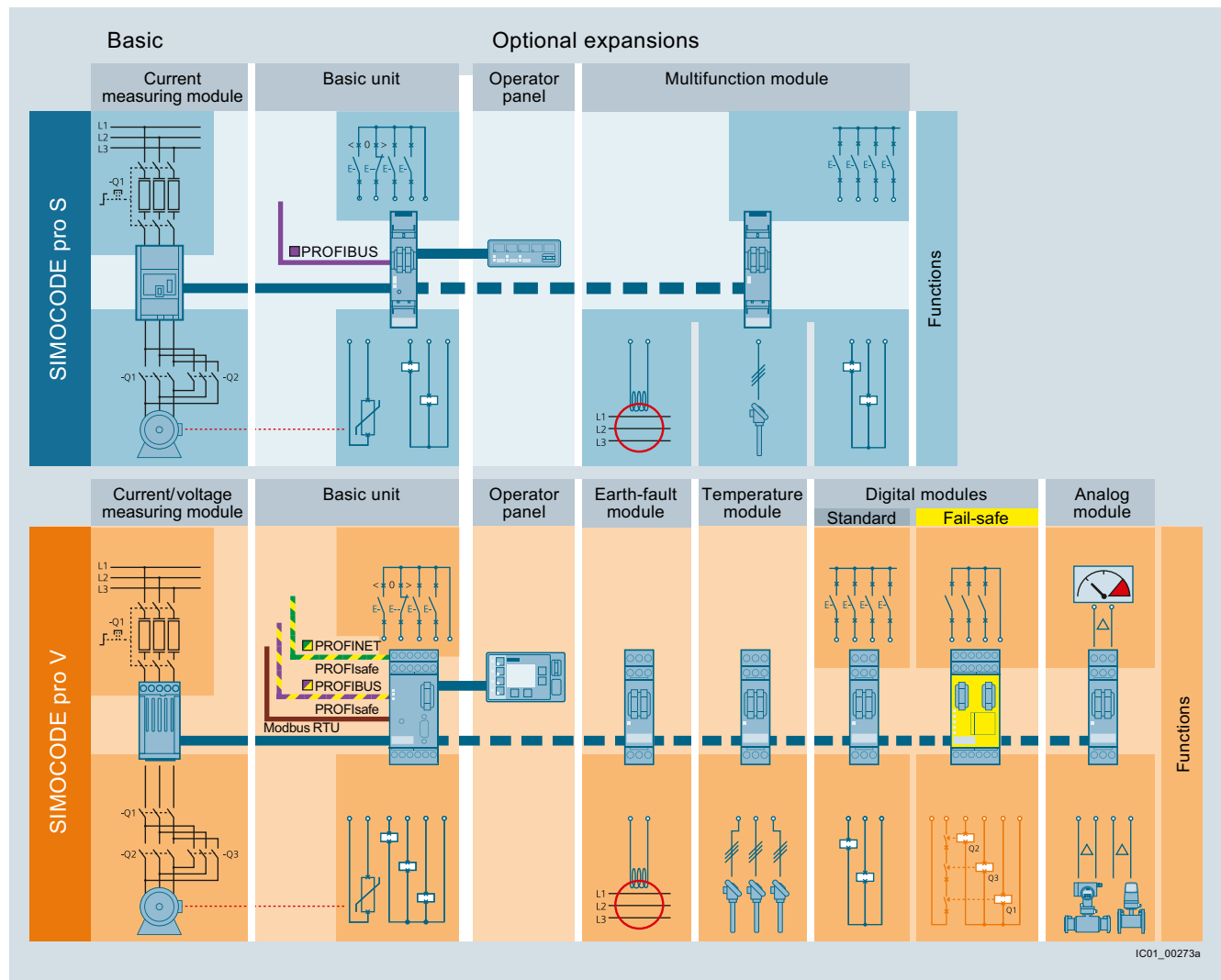
Note:

SIMOCODE pro can also be found in the TIA Selection Tool. The various system components can therefore be conveniently selected. See www.siemens.com/tia-selection-tool.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data



SIMOCODE pro S and SIMOCODE pro V: System structure

Article No. scheme

Product versions		Article number	
SIMOCODE pro motor management system		3UF7	☐ ☐ ☐ - 1 ☐ ☐ ☐ - 0
Type of unit/module	e. g. 0 = basic unit	☐	
Functional version of the module	e. g. 00 = SIMOCODE pro C	☐ ☐	
Connection type of the current transformer		☐	
Voltage version	e.g. B = 24 V DC	☐	
Enclosure color	e. g. 0 = light gray		☐
Example		3UF7	0 0 0 - 1 A B 0 0 - 0

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Benefits

General customer benefits

- Integrating the whole motor feeder into the process control by means of PROFIBUS DP, PROFINET, Modbus RTU or OPC UA significantly reduces the wiring outlay between the motor feeder and PLC.
- Decentralization of the automated processes by means of configurable control and monitoring functions in the feeder saves resources in the automation system and ensures full functionality and protection of the feeder even if the I&C or bus system fails
- The acquisition and monitoring of operating, service and diagnostics data in the feeder and process control system increases plant availability as well as maintenance and service-friendliness
- The high degree of modularity allows users to perfectly implement their plant-specific requirements for each motor feeder
- The SIMOCODE pro system offers functionally graded and space-saving solutions for each customer application
- The replacement of the control circuit hardware with integrated control functions decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of electronic full motor protection permits better utilization of the motors and ensures long-term stability of the tripping characteristic and reliable tripping even after years of service

Multifunctional, electronic full motor protection for rated motor currents up to 820 A

SIMOCODE pro offers comprehensive protection of the motor feeder by means of a combination of different, multi-step and delayable protection and monitoring functions:

- Inverse-time delayed electronic overload protection (CLASS 5E to 40E)
- Thermistor motor protection
- Phase failure/asymmetry protection
- Stall protection
- Monitoring of adjustable limit values for the motor current
- Voltage and power monitoring
- Monitoring of the power factor (motor idling/load shedding)
- Ground-fault monitoring
- Temperature monitoring, e.g. via PT100/PT1000
- Monitoring of operating hours, downtime and number of starts etc.

Recording of measuring curves

SIMOCODE pro can record measuring curves and therefore is able, for example, to present the progression of motor current during motor start up.

Flexible motor control implemented with integrated control functions (instead of comprehensive hardware interlocks)

Many predefined motor control functions have already been integrated into SIMOCODE pro, including all necessary logic operations and interlocks:

- Overload relays
- Direct-on-line and reversing starters
- Wye/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing starter); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Actuation of a motor starter protector
- Soft starter actuation (also with direction reversal)

These control functions are predefined in SIMOCODE pro and can be assigned to the inputs and outputs of the PROFIBUS/PROFINET device (including the process image).

These predefined control functions can also be flexibly adapted to each customized configuration of a motor feeder by means of freely configurable logic modules (truth tables, counters, timers, edge evaluation, etc.) and with the help of standard functions (power failure monitoring, emergency start, external faults, etc.), without additional auxiliary relays being necessary in the control circuit.

SIMOCODE pro makes a lot of additional hardware and wiring in the control circuit unnecessary, which results in a high level of standardization of the motor feeder in terms of its design and circuit diagrams.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Detailed operational, service and diagnostics data

SIMOCODE pro makes different operational, service and diagnostics data available and helps to detect potential faults in time and to prevent them by means of preventative measures. In the event of a malfunction, a fault can be diagnosed, localized and rectified very quickly – there are no or very short downtimes.

Operating data

- Motor switching state derived from the current flow in the main circuit
- All phase currents
- All phase voltages and phase-to-phase voltages
- Active power, apparent power and power factor
- Phase asymmetry and phase sequence
- Ground-fault current
- Time to trip
- Motor temperature
- Remaining cooling time etc.

Service data

- Motor operating hours
- Motor stop times
- Number of motor starts
- Number of overload trips
- Interval for compulsory testing of the enabling circuits
- Energy consumed
- Internal comments stored in the device etc.

Diagnostics data

- Numerous detailed early warning and fault messages
- Internal device fault logging with time stamp
- Time stamping of freely selectable status, alarm or fault messages etc.

Easy operation and diagnostics

Operator panel

The operator panel is used to control the motor feeder and can replace all conventional pushbuttons and indicator lights to save space. It makes SIMOCODE pro or the feeder directly operable in the control cabinet. It features all the status LEDs available on the basic unit and externalizes the system interface for simple parameterization or diagnosis on a PC/PG.

Operator panel with display

As an alternative to the 3UF720 standard operator panel for SIMOCODE pro V, a 3UF721 operator panel with display is also available. This can additionally indicate current measured values, operational and diagnostics data or status information of the motor feeder at the control cabinet. The pushbuttons of the operator panel can be used to control the motor. Also, when SIMOCODE pro V PROFINET is used it is possible to set parameters such as rated motor current, limit values, etc. directly via the operator panel with display.

Communication

SIMOCODE pro has either an integrated PROFIBUS DP or Modbus RTU interface (SUB-D or terminal connection) or a PROFINET interface (2 x RJ45).

Fail-safe disconnection through PROFIBUS or PROFINET with the PROFIsafe profile is also possible in conjunction with a fail-safe controller (F-CPU) and the DM-F PROFIsafe fail-safe digital module.

SIMOCODE pro for PROFIBUS

SIMOCODE pro for PROFIBUS supports for example:

- Cyclic services (DPV0) and acyclic services (DPV1)
- Extensive diagnostics and hardware interrupts
- Time stamp with high timing precision (SIMATIC S7) for SIMOCODE pro V
- DPV1 communication after the Y-Link

SIMOCODE pro for PROFINET

SIMOCODE pro for PROFINET supports for example:

- Line and ring bus topology thanks to an integrated switch
- Media redundancy via MRP protocol
- Operating, service and diagnostics data via standard web browser
- OPC UA server for open communication with visualization and control system
- NTP-synchronized time
- Interval function and measured values for power management via PROFIenergy
- Module exchange without PC/memory module through proximity detection
- Extensive diagnostics and maintenance alarms

System redundancy with SIMOCODE pro for PROFINET

The device supports the system redundancy mechanisms of PROFINET IO and therefore can be operated directly on fault-tolerant systems such as SIMATIC S7-400 H. As such, SIMOCODE pro can provide decisive added value also for the field level of plants in which plant availability and control system redundancy are priorities.

SIMOCODE pro for Modbus RTU

SIMOCODE pro for Modbus RTU supports, for example:

- Communication at baud rates 1200/2400/4800/9600/19200/57600
- Access to freely parameterizable process image via Modbus RTU
- Access to all operating, service and diagnostics data via Modbus RTU

Notes on safety

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information on Industrial Security, see www.siemens.com/industrialsecurity.

For SIMOCODE pro motor management and control devices with communication function, see [page 10/14 onwards](#).

For accessories, see [page 10/19 onwards](#).

For more information, e.g. on software, see [page 14/1](#).

Autonomous operation

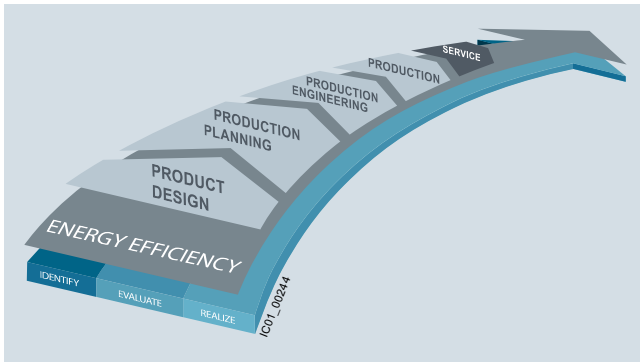
An essential feature of SIMOCODE pro is the autonomous execution of all protection and control functions, even when communication to the I&C system is interrupted. This means that even in the event of bus system or automation system failure, full functionality of the feeder is ensured or a specific behavior can be parameterized in case of such a fault, e.g. targeted shutdown of the feeder or execution of particular parameterized control mechanisms (such as reversal of the direction of rotation).

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The SIMOCODE pro 3UF7 motor management system makes the following contribution to the energy efficiency of the plant as a whole:

- Energy consumption:
Clear display of the energy consumption of a motor feeder or process element by means of the acquisition and transmission of all operating and consumption data, such as current, voltage, active and reactive power, energy consumption, motor temperature, etc.

- Energy management:
Evaluation of measured energy values (e.g. limit value monitoring) with exporting of local or central actions (= forwarding to higher-level)
- PROFlenergy:
SIMOCODE pro V PROFINET supports the PROFlenergy functions. Reduced energy consumption thanks to automatic disconnection in the intervals and forwarding of the measured values for higher-level energy management systems.

Advantages from integrated energy management



As an integrated option for the TIA Portal, the SIMATIC Energy Suite couples energy management with automation efficiently, making energy consumption at your production facility transparent.

Thanks to the simplified configuration of energy-measuring components, e.g. SIMOCODE pro V, configuration effort is also clearly reduced.

Thanks to end-to-end connection with higher-level energy management systems or cloud-based services, you can seamlessly expand the recorded energy data to create a cross-site energy management system.

The advantages at a glance:

- Automatic generation of energy management data
- Integration into TIA Portal and into automation
- Simple configuration

For more information, see www.siemens.com/energysuite.

Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e.g. chemical, oil/gas, water/wastewater, steel or cement industries) and where it is important to prevent plant downtimes through detailed operational, service and diagnostics data or to localize faults very quickly when they occur.

SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers (MCCs) in the process industry and for power plant technology.

Applications

Protection and control of motors in hazardous areas for types of protection EEx e/d according to ATEX guideline 94/9/EC

- With heavy starting (paper, cement, metal and water industries)
- In high-availability plants (chemical, oil, raw material processing industries, power plants)

Use of SIMOCODE pro 3UF7 with IE3/IE4 motors

Note:

When using the SIMOCODE pro 3UF7 in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring; see [Application Manual "SIRIUS Controls with IE3/IE4 motors"](#), <https://support.industry.siemens.com/cs/ww/en/view/94770820>.

For more information, see [Preface](#), page 7.

Safety technology for SIMOCODE pro

The safe disconnection of motors in the process industry is becoming increasingly important as the result of new and revised standards and requirements in the safety technology field.

With the DM-F Local and DM-F PROFIsafe fail-safe expansion modules it is easy to integrate functions for fail-safe disconnection in the SIMOCODE pro V motor management system while retaining service-proven concepts. The strict separation of safety functions and operational functions proves particularly advantageous for planning, configuring and construction. Seamless integration in the motor management system leads to greater transparency for diagnostics and during operation of the system.

Suitable components for this purpose are the DM-F Local and DM-F PROFIsafe fail-safe expansion modules, depending on the requirements:

- The DM-F Local fail-safe digital module for when direct assignment between a fail-safe hardware shutdown signal and a motor feeder is required, or
- The DM-F PROFIsafe fail-safe digital module for when a fail-safe controller (F-CPU) creates the signal for disconnection and transmits it in a fail-safe manner through PROFIBUS/PROFIsafe or PROFINET/PROFIsafe to the motor management system

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Technical specifications

More information		
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16337/td	"SIMOCODE pro Modbus RTU" Configuration Manual, see https://support.industry.siemens.com/cs/ww/en/view/108681641	
"SIMOCODE pro PROFIBUS" System Manual, see https://support.industry.siemens.com/cs/ww/en/view/20017780	"SIMOCODE pro Safety Fail-Safe Digital Modules" System Manual, see https://support.industry.siemens.com/cs/ww/en/view/50564852	
"SIMOCODE pro V PROFINET" System Manual, see https://support.industry.siemens.com/cs/ww/en/view/61896631	Application Manual "SIRIUS Controls with IE3/IE4 motors", see https://support.industry.siemens.com/cs/ww/en/view/94770820	
General data		
Type	3UF7	
Permissible ambient temperature		
• During operation	°C	-25 ... +60; 3UF721: 0 ... +60
• During storage and transport	°C	-40 ... +80; 3UF721: -20 ... +70
Degree of protection (acc. to IEC 60529)		
• Measurement modules with busbar connection		IP00
• Operator panel (front) and door adapter (front) with cover		IP54
• Other components		IP20
Shock resistance (sine pulse)	g/ms	15/11
Mounting position	Any	
Frequency	Hz	50/60 ± 5 %
EMC interference immunity (according to IEC 60947-1)		
• Conducted interference, burst acc. to IEC 61000-4-4	kV	Corresponds to degree of severity 3
	kV	2 (power ports)
	V	1 (signal ports)
• Conducted interference, high frequency acc. to IEC 61000-4-6	V	10
• Conducted interference, surge acc. to IEC 61000-4-5	kV	2 (line to ground); 3UF7320-1AB, 3UF7330-1AB: 1 (line to ground)
	kV	1 (line to line); 3UF7320-1AB, 3UF7330-1AB: 0.5 (line to line)
• Electrostatic discharge, ESD acc. to IEC 61000-4-2	kV	8 (air discharge); 3UF7020: Operator input during operation only on the front
	kV	6 (contact discharge); 3UF721: 4 (contact discharge)
• Field-related interference acc. to IEC 61000-4-3	V/m	10
EMC emitted interference (according to IEC 60947-1)		
• Conducted and radiated interference emission	EN 55011/EN 55022 (CISPR 11/CISPR 22) (Corresponds to degree of severity A)	
Protective separation (acc. to IEC 60947-1)	All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, i.e. they are designed with doubled creepage paths and clearances. In this context, compliance with the instructions in the test report "Safe Isolation" No. 2668 is required.	
Basic units		
Type	3UF7000-1AU00-0, 3UF7010-1AU00-0 3UF7011-1AU00-0, 3UF7020-1AU01-0 3UF7012-1AU00-0	3UF7000-1AB00-0, 3UF7010-1AB00-0 3UF7011-1AB00-0, 3UF7020-1AB01-0 3UF7012-1AB00-0
Control circuit		
Rated control supply voltage U_s (acc. to IEC 61131-2)	110 ... 240 AC/DC; 50/60 Hz	24 V DC
Operating range		
• SIMOCODE pro C (3UF7000) and SIMOCODE pro V (3UF7010/3UF7012)	0.85 ... 1.1 x U_s	0.80 ... 1.2 x U_s
• SIMOCODE pro V PN (3UF7011) and SIMOCODE pro S (3UF7020)		
- Operation	0.85 ... 1.1 x U_s	0.80 ... 1.2 x U_s
- Start up	0.85 ... 1.1 x U_s	0.85 ... 1.2 x U_s
Power consumption		
• SIMOCODE pro C (3UF7000) and SIMOCODE pro S (3UF7020)	7 VA/5 W	5 W
• SIMOCODE pro V (3UF7010/3UF7012)	10 VA/7 W	7 W
incl. two connected expansion modules		
• SIMOCODE pro V PN (3UF7011)	11 VA/8 W	8 W
incl. two connected expansion modules		
Rated insulation voltage U_i	V	300 (for pollution degree 3)
Rated impulse withstand voltage U_{imp}	kV	4
Relay outputs		
• Number		
- SIMOCODE pro C, SIMOCODE pro V, SIMOCODE pro V PN	3 monostable relay outputs	
- SIMOCODE pro S	2 monostable relay outputs	
• Specified short-circuit protection for auxiliary contacts (relay outputs)		
- Fuse links	6 A operational class gG; 10 A quick-response (IEC 60947-5-1)	
- Miniature circuit breaker	1.6 A, C characteristic (IEC 60947-5-1); 6 A, C characteristic (Ik < 500 A)	
• Rated uninterrupted current	A	6
• Rated switching capacity		
- AC-15	6 A/24 V AC	6 A/ 120 V AC
- DC-13	2 A/24 V DC	0.55 A/60 V DC
		3 A/ 230 V AC
		0.25 A/125 V DC
Inputs (binary)	4 inputs supplied internally by the device electronics (with 24 V DC) and connected to a common potential	
Thermistor motor protection (binary PTC)		
• Summation cold resistance	kΩ	≤ 1.5
• Response value	kΩ	3.4 ... 3.8
• Return value	kΩ	1.5 ... 1.65

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Current measuring modules or current/voltage measuring modules						
Type		3UF71.0	3UF71.1	3UF71.2	3UF71.3	3UF71.4
Main circuit						
Set current I_e	A	0.3 ... 3	2.4 ... 25	10 ... 100	20 ... 200	63 ... 630
Rated insulation voltage U_i	V	690; 3UF7103 and 3UF7104: 1 000 (at pollution degree 3)				
Rated operational voltage U_e	V	690				
Rated impulse withstand voltage U_{imp}	kV	6; 3UF7103 and 3UF7104: 8				
Rated frequency	Hz	50/60				
Type of current		Three-phase current				
Short circuit		Additional short-circuit protection is required in the main circuit				
Accuracy of current measurement (in the range of 1 x minimum current setting I_u to 8 x max. current setting I_o)	%	± 3				
Typical voltage measuring range						
• Phase-to-phase voltage/line-to-line voltage (e.g. U_{L1L2})	V	110 ... 690				
• Phase voltage (e.g. U_{L1N})	V	65 ... 400				
Accuracy						
• Voltage measurement (phase voltage U_L in the range 230 ... 400 V)	%	± 3 (typical)				
• Power factor measurement (in the rated load range p.f. = 0.4 ... 0.8)	%	± 5 (typical)				
• Apparent power measurement (in the rated load range)	%	± 5 (typical)				
Notes on voltage measurement						
• In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems		In these networks the current/voltage measuring module can be used only with an upstream decoupling module on the system interface. In the supply lines from the main circuit for voltage measurement of SIMOCODE pro it may be necessary to provide additional line protection!				
• Supply lines for voltage measurement						
Digital modules or multifunction modules						
Type		3UF7300, 3UF7310, 3UF7600				
Control circuit						
Rated insulation voltage U_i	V	300 (at pollution degree 3)				
Rated impulse withstand voltage U_{imp}	kV	4				
Relay outputs		2 monostable or bistable relay outputs (depending on the version)				
• Number						
• Specified short-circuit protection for auxiliary contacts (relay outputs)		6 A operational class gG; 10 A quick-response (IEC 60947-5-1) 1.6 A, C characteristic (IEC 60947-5-1); 6 A, C characteristic (Ik <500 A)				
- Fuse links						
- Miniature circuit breaker		6				
• Rated uninterrupted current						
• Rated switching capacity		6 A/24 V AC 6 A/ 120 V AC 3 A/ 230 V AC 2 A/24 V DC 0.55 A/60 V DC 0.25 A/125 V DC				
- AC-15						
- DC-13						
Inputs (binary)		4 inputs, electrically isolated, supplied externally with 24 V DC or 110 ... 240 V AC/DC depending on the version, connected to a common potential				
Ground-fault modules or multifunction modules						
Type		3UF7510, 3UF7600				
Control circuit						
Connectable residual-current transformer		3UL23				
Type of current for monitoring		Type A (AC and pulsating DC residual currents)				
Adjustable response value		30 mA ... 40 A				
Relative measurement error	%	7.5				
Temperature modules or multifunction modules						
Type		3UF7600, 3UF7700				
Sensor circuit						
Number of temperature sensors		3 temperature sensors 1 temperature sensor				
• 3UF7700						
• 3UF7600						
Typical sensor current						
• PT100		1 (typical) 0.2 (typical)				
• PT1000/KTY83/KTY84/NTC						
Open-circuit/short-circuit detection						
• Sensor type		PT100/PT1000	KTY83-110	KTY84	NTC	
- Open circuit		✓	✓	✓	--	
- Short circuit		✓	✓	✓	✓	
- Measuring range		°C	-50 ... +500	-50 ... +175	-40 ... +300	80 ... 160
Measuring accuracy at 20 °C ambient temperature (T20)	K	< ± 2				
Deviation due to ambient temperature (in % of measuring range)	%	0.05 per K deviation from T20				
Conversion time	ms	500				
Connection type		Two- or three-wire connection				

- ✓ Detection possible
 -- Detection not possible

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

Analog module					
Type	3UF74				
Control circuit					
Inputs					
• Channels		2 (passive)			
• Parameterizable measuring ranges	mA	0/4 ... 20			
• Shielding		Up to 30 m shield recommended, from 30 m shield required			
• Max. input current (destruction limit)	mA	40			
• Accuracy	%	± 1			
• Input resistance	Ω	50			
• Conversion time	ms	150			
• Resolution	Bit	12			
• Open-circuit detection		With measuring range 4 ... 20 mA			
Outputs					
• Channels		1			
• Parameterizable output range	mA	0/4 ... 20			
• Shielding		Up to 30 m shield recommended, from 30 m shield required			
• Max. voltage at output	V DC	30			
• Accuracy	%	± 1			
• Max. output load	Ω	500			
• Conversion time	ms	25			
• Resolution	Bit	12			
• Short-circuit proof		Yes			
Connection type	Two-wire connection				
Electrical separation of inputs/output to the device electronics	No				
Fail-safe digital modules					
Type	3UF7320-1AB00-0		3UF7320-1AU00-0	3UF7330-1AB00-0	3UF7330-1AU00-0
Control circuit					
Rated control supply voltage U_s	V	24 DC	110 ... 240 AC/DC; 50/60 Hz	24 DC	110 ... 240 AC/DC; 50/60 Hz
Power consumption		3 W	9.5 VA/4.5 W	4 W	11 VA/5.5 W
Rated insulation voltage	V	300			
Rated impulse withstand voltage U_{imp}	kV	4			
Relay outputs					
• Number		2 relay enabling circuits, 2 relay outputs			
Version of the fuse link	A	4, operational class gG			
For short-circuit protection of the relay enabling circuit					
Rated uninterrupted current	A	5			
Rated switching capacity					
• AC-15		3 A/24 V AC; 3 A/120 V AC; 1.5 A/230 V AC			
• DC-13		4 A/24 V DC; 0.55 A/60 V DC; 0.22 A/125 V DC			
Inputs (binary)	5 (with internal power supply from the device electronics)				
Cable length					
• Between sensor/start signal and evaluation electronics	m	1 500			
• For further digital signals	m	300			
Safety data ¹⁾					
SIL level max. according to IEC 61508		3			
Performance level PL according to EN ISO 13849-1		e			
Category according to EN ISO 13849-1		4			
Stop category according to EN 60204-1		0			
Probability of a dangerous failure (at 40 °C) for SIL 3 applications					
• Per hour (PFH _d) at a high demand rate according to IEC 62061	1/h	4.5 x 10 ⁻⁹	4.6 x 10 ⁻⁹	4.4 x 10 ⁻⁹	4.4 x 10 ⁻⁹
• On demand (PFD _{avg}) at a low demand rate according to IEC 61508		5.4 x 10 ⁻⁶	5.5 x 10 ⁻⁶	5.1 x 10 ⁻⁶	5.2 x 10 ⁻⁶
T1 value for proof-test interval or service life according to IEC 61508	a	20			

¹⁾ More safety data, see system manual "SIMOCODE pro Safety Fail-Safe Digital Modules", <https://support.industry.siemens.com/cs/ww/en/view/50564852>.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

General data

More information

Configuration instructions when using an operator panel with display and/or a decoupling module with SIMOCODE pro V with PROFIBUS or Modbus RTU

If you want to use an operator panel with display and/or a decoupling module in the SIMOCODE pro V system with PROFIBUS or Modbus RTU, then the following configuration instructions concerning the type and number of connectable expansion modules must be observed.

The following tables show the maximum possible configuration of the expansion modules for the various combinations. These are also conveniently stored in the TIA Selection Tool. See www.siemens.com/tia-selection-tool.

The DM-F Local and DM-F PROFIsafe fail-safe expansion modules behave in this connection like digital modules for standard applications.

Use of an operator panel with display

Digital module 1	Digital module 2	Analog module	Temperature modules	Ground-fault module
Only operator panel with display for SIMOCODE pro V (24 V DC or 110 ... 240 V AC/DC)				
Max. 4 expansion modules can be used				
Operator panels with display and current/voltage measurement with SIMOCODE pro V (110 ... 240 V AC/DC)				
Max. 3 expansion modules can be used or:				
--	--	✓	✓	--

✓ Available

-- Not available

Use of a decoupling module (voltage measurement in insulated networks)

Digital module 1	Digital module 2	Analog module	Temperature modules	Ground-fault module
SIMOCODE pro V (24 V DC)				
✓ ¹⁾	✓ ¹⁾	✓	✓	✓
SIMOCODE pro V (110 ... 240 V AC/DC)				
✓	✓	--	✓	✓
✓ ¹⁾	✓ ¹⁾	✓	✓	--
✓	--	✓	✓	--
✓	--	✓	--	✓

✓ Available

-- Not available

¹⁾ No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

Use of a decoupling module (voltage measurement in insulated networks) in combination with an operator panel with display

Digital module 1	Digital module 2	Analog module	Temperature modules	Ground-fault module
SIMOCODE pro V (24 V DC)				
✓	--	✓	✓	✓
✓	✓	--	✓	✓
SIMOCODE pro V (110 ... 240 V AC/DC)				
✓ ¹⁾	--	✓	✓	✓
✓	✓	--	--	--
✓ ²⁾	✓ ²⁾	✓ ³⁾	--	--
✓	--	--	✓	✓

✓ Available

-- Not available

¹⁾ No bistable relay outputs and no more than 3 of 5 relay outputs active simultaneously (> 3 s).

²⁾ No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

³⁾ Analog module output is not used.

Protective separation

All circuits in SIMOCODE pro are safely isolated from each other in accordance with IEC 60947-1. That is, they are designed with double creepages and clearances. In the event of a fault, therefore, no parasitic voltages can be formed in neighboring circuits. The instructions of Test log No. 2668 must be complied with.

Types of protection EEx e and EEx d

The overload protection and the thermistor motor protection of the SIMOCODE pro system comply with the requirements for overload protection of explosion-proof motors to the type of protection:

- EEx d "flameproof enclosure" e.g. according to IEC 60079-1
- EEx e "increased safety" e.g. according to IEC 60079-7

When using SIMOCODE pro devices with a 24 V DC control voltage, electrical separation must be ensured using a battery or a safety transformer according to IEC 61558-2-6.

EC type test certificate: BVS 06 ATEX F 001

Test report: BVS PP 05.2029 EC.

Selection data for type-tested assemblies/load feeders

For configuration tables according to type of coordination "1" or "2", see:

- Manual "Configuring SIRIUS", <https://support.industry.siemens.com/cs/ww/en/view/40625241>
- Manual "Configuring SIRIUS Innovations", <https://support.industry.siemens.com/cs/ww/en/view/39714188>
- System Manual "SIMOCODE pro PROFIBUS", <https://support.industry.siemens.com/cs/ww/en/view/20017780>
- System Manual "SIMOCODE pro PROFINET", <https://support.industry.siemens.com/cs/ww/en/view/61896631>
- Configuration Manual "SIMOCODE pro Modbus RTU", <https://support.industry.siemens.com/cs/ww/en/view/108681641>

System manual

The SIMOCODE pro system manual describes the motor management system and its functions in detail. It provides information on configuration, start up, servicing and maintenance. A typical example of a reversing starter application is used to teach the user quickly and practically how to use the system. In addition to help on how to identify and rectify faults in the event of a malfunction, the manual also contains special information for servicing and maintenance. For selection of equipment and for configuration, it is recommended to consult the system manual.

For a detailed description of the DM-F Local and DM-F PROFIsafe fail-safe expansion modules, see System Manual "SIMOCODE pro Safety Fail-Safe Digital Modules", <https://support.industry.siemens.com/cs/ww/en/view/50564852>.

Internet

For more information, see www.siemens.com/simocode.

SIMOCODE 3UF Motor Management and Control Devices

SIMOCODE pro 3UF7 Motor Management and Control Devices

Basic units **IE3/IE4 ready**

Selection and ordering data

Version	SD	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	d	Article No.	Price per PU			
SIMOCODE pro PROFIBUS						
	SIMOCODE pro C PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs Rated control supply voltage U_g : • 24 V DC • 110 ... 240 V AC/DC	 3UF7000-1AB00-0  3UF7000-1AU00-0		1 1	1 unit 1 unit	42J 42J
3UF7000-1A.00-0						
	SIMOCODE pro S¹⁾ PROFIBUS DP interface, 1.5 Mbit/s, RS 485 4 I/2 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by a multifunction module Rated control supply voltage U_g : • 24 V DC • 110 ... 240 V AC/DC	 3UF7020-1AB01-0  3UF7020-1AU01-0		1 1	1 unit 1 unit	42J 42J
3UF7020-1A.01-0						
	SIMOCODE pro V PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules, Rated control supply voltage U_g : • 24 V DC • 110 ... 240 V AC/DC	 3UF7010-1AB00-0  3UF7010-1AU00-0		1 1	1 unit 1 unit	42J 42J
3UF7010-1A.00-0						
SIMOCODE pro PROFINET						
	SIMOCODE pro V PROFINET ETHERNET/PROFINET IO, OPC UA server and web server, 100 Mbit/s, 2 x connection to bus through RJ45, PROFINET system redundancy, media redundancy protocol, 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules, web server in German/English/Chinese/Russian Rated control supply voltage U_g : • 24 V DC • 110 ... 240 V AC/DC	 3UF7011-1AB00-0  3UF7011-1AU00-0		1 1	1 unit 1 unit	42J 42J
3UF7011-1A.00-0						
SIMOCODE pro Modbus RTU						
	SIMOCODE pro V Modbus RTU²⁾ Modbus RTU interface, 57.6 kbit/s, RS485; 4I/3O freely parameterizable; input for thermistor connection; monostable relay outputs; can be expanded using expansion modules Rated control supply voltage U_g : • 24 V DC • 110 ... 240 V AC/DC	 3UF7012-1AB00-0  3UF7012-1AU00-0		1 1	1 unit 1 unit	42J 42J
3UF7012-1A.00-0						

¹⁾ The connection cable to the current measuring module must be at least 30 cm.

²⁾ When using an operator panel with display, the product version must be E09 or higher (from 05/2015). The SIMOCODE ES (TIA Portal) V14 software is necessary for parameterization. See page 10/21.