SIMOCODE pro 3UF7 motor management and control devices

Overview

SIMOCODEpro basic unit, expansion module and operator panel

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 startup, operation and maintenance of a system.

When SIMOCODE pro is installed in the low-voltage switchboard, 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 which is independent of the automation system
- Flexible software instead of hardware for the motor control
- Detailed operational, service and diagnostics data
- Open communication through PROFIBUS DP, the standard for fieldbus systems

SIMOCODE ES is the software package for SIMOCODE pro parameterization, start-up and diagnostics.

Benefits

General customer benefits

- Integrating the whole motor feeder into the process control by means of a bus significantly reduces the wiring outlay between the motor feeder and PLC
- Distribution 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 operational, 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 software decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of solid-state 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, solid-state 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 solid-state overload protection (Class 5 ... 40)
- Thermistor motor protection
- Phase failure / unbalance 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)
- Earth-fault monitoring
- Temperature monitoring, e.g. over 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 software (instead of comprehensive hardware interlocks)

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

- Direct-on-line and reversing starters
- Star/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing switch); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Activation of a circuit breaker
- Soft starter actuation (also with direction reversal)

These control functions have been implemented in SIMOCODE pro by means of software and can be freely assigned to the inputs and outputs of the device (including PROFIBUS DP).

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 ...) and with the help of standard functions (power failure monitoring, emergency start, external faults ...), 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.

Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e.g. steel or cement industry) and where it is important to prevent plant downtimes through detailed operational, service and diagnostics data or to localize the fault very quickly in the event of a malfunction.
SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers 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 directive 94/9/EC
- With heavy starting (paper, cement, metal and water industries)
- In high-availability plants (chemical, oil, raw material processing industries, power plants)

Industries

Today, SIMOCODE pro is mainly used in the chemical (incl. oil and gas), steel, water, paper, pharmaceutical, cement, and glass industry. It is also used for applications in power plants and large diamond, gold and platinum mines. Based on the experience made with the predecessor system SIMOCODE-DP, SIMOCODE pro has been tailored even more specifically to the requirements of these industries. An essential requirement in these industries is the availability of the motors and thus the availability of the whole process. Plant downtimes caused by faults frequently result in high costs. For this reason, it is very important to detect potential faults early on and to initiate targeted countermeasures. SIMOCODE pro offers users an up-to-date motor management system based on years of experience.

Selection and ordering data

Version	Current setting	Width	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	A	mm							kg
SIMOCODE pro									
 3UF7 000-1A.00-0									
SIMOCODE pro C, basic units 1 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_s:									
• 24 V DC			A	**3UF7 000-1AB00-0**		1	1 unit	131	0.350
• 110 ... 240 V AC/DC			A	**3UF7 000-1AU00-0**		1	1 unit	131	0.350
 3UF7 010-1A.00-0									
SIMOCODE pro V, basic units 2 PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded with expansion modules, rated control supply voltage U_s:									
• 24 V DC			A	**3UF7 010-1AB00-0**		1	1 unit	131	0.350
• 110 ... 240 V AC/DC			A	**3UF7 010-1AU00-0**		1	1 unit	131	0.350
 3UF7 100-1AA00-0									
Current measuring modules									
Straight-through transformers									
	0.3 ... 3	45	A	**3UF7 100-1AA00-0**		1	1 unit	131	0.100
	2.4 ... 25	45	A	**3UF7 101-1AA00-0**		1	1 unit	131	0.150
	10 ... 100	55	A	**3UF7 102-1AA00-0**		1	1 unit	131	0.350
	20 ... 200	120	A	**3UF7 103-1AA00-0**		1	1 unit	131	0.600
Busbar connection									
	20 ... 200	120	A	**3UF7 103-1BA00-0**		1	1 unit	131	1.000
	63 ... 630	145	A	**3UF7 104-1BA00-0**		1	1 unit	131	1.750
 3UF7 110-1AA00-0									
Current/voltage measuring modules[1] Voltage measuring up to 690 V									
Straight-through transformers	0.3 ... 3	45	C	**3UF7 110-1AA00-0**		1	1 unit	131	0.150
	2.4 ... 25	45	A	**3UF7 111-1AA00-0**		1	1 unit	131	0.200
	10 ... 100	55	A	**3UF7 112-1AA00-0**		1	1 unit	131	0.400
	20 ... 200	120	A	**3UF7 113-1AA00-0**		1	1 unit	131	0.700
Busbar connections	20 ... 200	120	A	**3UF7 113-1BA00-0**		1	1 unit	131	1.000
	63 ... 630	145	A	**3UF7 114-1BA00-0**		1	1 unit	131	1.750
 3UF7 200-1AA00-0									
Operator panels Installation in control cabinet door or front plate, for plugging into basic unit, 10 LEDs for status display and user-assignable buttons for manual control			A	**3UF7 200-1AA00-0**		1	1 unit	131	0.100

See footnote page 7/8.

*** You can order this quantity or a multiple thereof.**