Optimum process control:
The PCS 7 library SIMOCODE pro
SIRIUS motor management systems
The flexible motor management system SIMOCODE pro puts an end to plant downtimes. It not only helps to prevent failures in the first place but also provides fast troubleshooting support when things go wrong. Thanks to standardized software tools, it can be integrated in the PCS 7 process control system without difficulties. With the PCS 7 library SIMOCODE pro, motors can be easily and rapidly controlled and monitored. The integration in SIMATIC PDM allows for a convenient plant-wide configuration from a central location. Your advantage: All process-relevant data are at all times uniformly and consistently integrated in the process control system.

More powerful, intuitive and flexible: SIMOCODE pro motor management system
SIMOCODE pro is the flexible and modular motor management system for motors in the low-voltage range, which can be easily and directly connected to automation systems via PROFIBUS DP. Designed for applications in motor control centers (MCC) of the process industry and in the field of power plant engineering, it covers every aspect of functionality between the motor feeder and the automation system. Additionally, it unites all important protection, monitoring and control functions for every motor feeder in only one compact system.

SIMOCODE pro Safety
The safe disconnection of motors is becoming increasingly important due to the introduction of new specifications and regulations in the field of safety technology. With flexibly applicable fail-safe expansion modules, safety technology now also becomes an integral part of the motor management system. SIMOCODE pro sets new standards in the implementation of this trend.
Improved transparency, more information – SIMOCODE pro with PCS 7: The advantages at a glance

• Uniform and consistent integration in SIMATIC PCS 7
• Standardized blocks for easy integration and optimum operation
• Comfortable integration of safety technology thanks to SIMOCODE pro Safety
• Increased process transparency thanks to a higher information density in the control system
• Plant-wide device parameterization and diagnostics with SIMATIC PDM
• Preventive maintenance and reduced downtimes thanks to the integration in the PCS 7 maintenance station
• Power management in connection with SIMATIC PCS 7 powerrate

The result: With SIMOCODE pro, you will increase the process control quality and reduce costs at the same time – from the planning to the installation phase and the operation or maintenance of a plant.

Integrated functionality: Optimum process control for all process control systems

In addition to the general sensor technology, also the motor feeder data are increasingly integrated in the process control system. SIMOCODE pro supports this trend and provides these data to all process control systems via PROFIBUS. With SIMOCODE pro, all functions are already integrated in the basic devices and, thanks to the corresponding software tools, can be readily used in the control room. This way, SIMOCODE pro provides greater process transparency and a considerably increased information density in the control system without inducing further costs.

With the integration of SIMOCODE pro in the process control system, failures can be easily and reliably prevented as well as quickly identified and corrected. The time stamp function of SIMOCODE pro V even allows for a precisely timed acquisition of process signals. Downtimes are reduced to a minimum or can be avoided in the first place. Furthermore, SIMOCODE pro also provides important output data for an optional power management system with SIMATIC PCS 7 powerrate – without any additional hardware.

Comfortable integration: The PCS 7 function block library

Via the PCS 7 function block library, SIMOCODE pro can be easily and conveniently integrated in the SIMATIC PCS 7 process control system. As, amongst others, easy configurability has been focused, the number of configuration steps could be considerably reduced. The functional blocks are aligned with the PCS 7 standard libraries and optimally matched to the functions of SIMOCODE pro. Users who have integrated conventional motor feeders in PCS 7 can therefore smoothly switch over to SIMOCODE pro.

The PCS 7 function block library provides all modules required for the automation system – as well as the block icons and faceplates for the operation station required for operating and monitoring. No matter whether SIMOCODE pro protects and controls pumps, fans or motor valves – the right blocks are already there!

The integration of the SIMOCODE pro motor management system in SIMATIC PDM allows for plant-wide device parameter setting and diagnostics.

What else: Via the PCS 7 function block library, SIMOCODE pro can be integrated in the plant-level asset management, which is implemented by the PCS 7 maintenance station, without any additional configuration efforts.
Monitoring par excellence:
Systematic motor management

Motor blocks for all motor control functions

With the motor blocks, the low-voltage motors controlled and protected by SIMOCODE pro can be integrated in a wide range of motor control functions in the field of process automation. They act as interface between the process control system and the motors managed by SIMOCODE pro. The blocks support motors with direct on-line or direction/speed reversing starters and motor valve feeders alike. The advantage – no matter for which application – lies in the standardized integration.

To reduce the configuration expenditures, signal processing and technological functions are combined in one motor function block.

Thus, access to the digital and analog SIMOCODE pro signals is combined with functions such as interlocking, operation mode selection and motor feeder control.

The important parameter – the current in the motor feeder – is already detected by SIMOCODE pro and, in addition to the motor protection, monitored for compliance with adjustable limit values. Both the motor current and the adjustable limit values can be accessed by the control system via the motor modules.

Block icons and faceplates for the motor blocks display the motor feeders on the operator station and provide all important information for operation, monitoring and detailed diagnostics.
A decisive advantage of the SIMOCODE pro motor management system is the availability of a large number of additional analog information on important parameters both of the motor feeder and the process. Depending on the SIMOCODE pro hardware components in use, parameters such as phase currents, feeder voltage, power factor, power rating and energy are available as output information, e.g. for power management functions with the PCS 7 add-on “SIMATIC PCS 7 powerrate.” In addition, also non-electrical parameters such as temperatures, filling levels and flow rates are available for further evaluation in the process control system.

SIMOCODE pro is not only able to detect the measurement values, but also to respond to an exceedance of these values with pre-defined reactions – e.g. a motor shutdown or warning signal.

In addition to information on the motor’s switching status, valuable information for diagnostics and preventive maintenance can be derived, i.e. the measurement value block provides parameters which allow conclusions as to the condition of the motor-driven pumps, fans, etc. Combined with the limit value functions integrated in the device, the scope of monitoring exceeds conventional motor protection by far.

Measurement and limit values are displayed in a separate faceplate of the measurement value block on the operator station. The measurement value faceplate is called up from the faceplate of the motor block.

SIMOCODE pro is equipped with powerful functions for the detection and monitoring of maintenance-relevant motor feeder data. E.g. operation and standstill times of the motor, switching cycles and overload tripping events are directly detected in the device and monitored for compliance with settable limit values.

Your advantage: Additional blocks for the detection and monitoring of these data in the control system are not needed. If required, the information, which are already available within the device, can be called up via the statistics block in the control system. These data are displayed on a separate statistics faceplate on the operator station. The counters can be preset with any desired values, which is, for example, required after a motor or contactor replacement. Like the faceplate for the measurement values, also the faceplate for the statistics can be opened from the faceplate of the motor block.
The safety-oriented application of components is becoming ever more important in the field of process automation. Systems may at any time be subject to situations which require the protection of persons or the environment by means of safety-related machine disconnection – e.g. safe motor disconnection. With the fail-safe expansion modules for SIMOCODE pro, two solutions which are optimally matched to these requirements are offered for safety technology integration in the motor feeder:

**Solution PROFlsafe with DM-F PROFlsafe**
In connection with PROFlsafe-capable SIMATIC S7 F-controls, safe motor disconnection is realized via PROFIBUS/PROFIsafe. The signal for fail-safe disconnection is processed in the safety program with S7 F-systems and transferred to the motor management system via the PROFlsafe profile.

Meanwhile, functional switch-on and switch-off is ensured via the SIMOCODE pro motor blocks of the standard program.

**Solution Local with DM-F Local**
Alternatively to applications with F-controls, safe motor disconnection can also be realized with the help of the fail-safe digital module DM-F Local and an EMERGENCY-STOP sensor, for instance. Functions such as start-up behavior and number of sensor circuits can be adjusted on the module to support manifold applicability. If the application comprises a fail-safe control without PROFlsafe, the DM-F Local is also able to process these fail-safe hardware signals for safe motor disconnection.

**Advantages offered by SIMOCODE pro Safety:**
- Functional switching and fail-safe disconnection are already combined in the motor management system without any additional efforts
- Attainable Safety Integrity Level (IEC 61508) up to SIL 3 supports broad applicability
- Functions for protective door monitoring are already integrated in the modules
- Significant diagnostics information is transferred to the process control system via SIMOCODE and displayed on the motor faceplates
In process industry, digital signals frequently have to be registered with a high temporal accuracy. A possible application would be the precisely timed detection of faults in a process system to allow for an analysis of cross-plant correlations.

The SIMOCODE pro V device series supports time stamping of up to 8 digital signals with a high temporal accuracy. The advantage: this function does not require any additional hardware for SIMOCODE pro. The only prerequisite is the time-of-day synchronization of SIMOCODE pro by a master clock via PROFIBUS.

When a signal change is detected at one of the configured inputs of the time stamp function, the event receives a time stamp already in the device and is buffered. Transmission and processing cycles are thus no longer relevant for the precise temporal detection of events. Events detected this way can be related to other events throughout the plant, e.g. to allow for a precise fault analysis and to clearly determine the triggering event.

To be able to use the time stamp function in PCS 7, a respective driver block is available for SIMOCODE pro V. This driver block serves the configuration of signalling texts for up to 8 time-stamped signals and ensures that the recorded events, including their time stamp, are transmitted to the automation system and entered in the message list of the operator station.

The faceplate with the recorded messages can be called up via a block icon for the driver block.
Parameter setting and diagnostics:

SIMOCODE pro with SIMATIC PDM

SIMATIC PDM (Process Device Manager) is frequently used for device configuration, parameter setting, commissioning and diagnostics within the scope of SIMATIC. The SIMOCODE pro motor management system communicates via PROFIBUS and is particularly suited for motor protection and control in the process industry due to its features. This is why it is integrated in SIMATIC PDM.

Parameter setting for SIMOCODE pro can be completely done by using SIMATIC PDM without the need for additional software. However, also all diagnostics functions, such as SIMOCODE pro analog value recording - often used as commissioning support or for fault analysis - can be operated.

SIMOCODE pro analog value recording in SIMATIC PDM

SIMOCODE pro parameter table in SIMATIC PDM
The SIMOCODE pro motor management system consistently implements the idea of a plant-level asset management. Maintenance-relevant events can trigger configurable reactions already in the device: switch-off – warning – signaling. These reactions are directly displayed on a central maintenance station due to the maintenance status: maintenance alarm – maintenance request – maintenance demand.

In addition to the maintenance status, further diagnostics information are available as, thanks to the integration of SIMOCODE pro in SIMATIC PDM, the maintenance station has direct access to the diagnostics functions.

SIMOCODE pro detects and monitors the operating hours and issues a maintenance request via the maintenance station if the limit value set for the respective feeder has been exceeded. An example for the maintenance measure linked to the maintenance request could be: “The bearings of the drive shaft must be maintained after a certain operating time.”

Accurate knowledge of a system’s demand profile facilitates the identification of saving potentials and supports efficient power procurement for reduced power costs. SIMOCODE pro and the PCS 7 power management add-on SIMATIC PCS 7 powerrate are the ideal tools for realizing a transparent power consumption from the infeed down to the individual motor feeder.

For example, the SIMOCODE pro measured value block for electrical active power provides the input value for the power detection block of PCS 7 powerrate.
Selection and ordering data

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## Support Information Planning Configuration Ordering Commissioning Operation Service

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