

# Micro Automation Sets

For Drive Technology

Brochure · July 2008



## MICRO AUTOMATION SET

**SIEMENS**

# Micro Automation Sets

## Compact Solutions for your success

**Micro Automation Sets are carefully matched combinations of automation components from the Siemens portfolio. They are tailored to solve various automation issues and can be used for applications in the fields of industry, machine building and building services technology – simple, inexpensive and tested.**

### Lots of value added:

- You can solve small automation tasks faster and easier.
- An integrated, tested solution package is available which you can fully rely on.
- You receive all information and data from one source.
- By combining standard components in one network, you safely can solve your automation task whilst making interesting cost saving.

Our Micro Automation Sets not only help you to find the right product quickly – we also support you in using them with our “plug-and-play” tools for a fast start-up:

### Functions in detail – Micro Application Examples

The Micro Application Examples show you what a concrete application can look like. All Sets are based on real-world applications as well as extensive tests and simulations. In this way, you benefit from detailed documentation and perfectly matched products.

### Plug and Play for every phase – free start-up software examples

We offer codes and parameter sets for programming the application. This means “plug and play” at your ease – whether at the planning, engineering or commissioning.

[www.siemens.com/microset](http://www.siemens.com/microset)

Micro Automation Sets can be used for applications in industry, machine building and building services technology – with the most varied of products from our wide-ranging portfolio.

#### ■ Drive Technology

Starting, controlling and positioning with standard drives

#### ■ Building Automation

Controlling, monitoring and signaling in building applications

#### ■ Remote Control

Remote monitoring and control of distributed plants

#### ■ Communication

Human machine interfacing in industrial applications and simple networking

#### ■ Measuring & Sensor Technology

Recording, measuring and evaluation of non-electrical values

# Drive Technology

## Starting, controlling and positioning with standard drives

Drive technology and automation technology grow closer together every day. Simple positioning tasks are becoming more and more automated, and low-cost, efficient local control is gaining in importance. Examples are manual feeding of raw material, transport of in-process products from one machine to the next processing unit, or simple handling tasks such as turning a material over.

### Application areas

- Industry
  - Handling machines
  - Material feed
  - Removal of the finished products from the machine
  - Screwdriving robots
  - Bottling Systems
  - Compressors
- Building Services Engineering, Infrastructure: Ventilators and Pumps in
  - Cooling and Heating Systems
  - Water and waste water supply
  - Ventilation Control
  - Booster Stations
  - Irrigation Plants

Typical drive requirements include moving to a precise position at a defined speed, or generating a given conveyor speed. Intelligent interlinking, integrated functions and interfaces allow to save time and money.

- SINAMICS G110 – the frequency inverter for single phase 200 to 240 V line supplies for variable speed applications.
- MICROMASTER – Frequency inverter for 3-phase networks and optional field-bus connection.
- SIRIUS Low-Voltage Controls and Distribution – for switching, protecting and starting

# Content

## Micro Automation Sets for Drive Technology

Introduction .....	2
MAS 1 .....	4
Closed-Loop Positioning Control with standard drives	
MAS 9 .....	6
Flexibly starting, controlling and monitoring motors	
MAS 22 .....	10
Controlled positioning with standard drives	
MAS 23 .....	12
PI controller for simple applications – Optimum control of motor speeds	
MAS 26 .....	14
Simple networking and cascading of drives	
Support via Internet .....	16



# Micro Automation Set 1

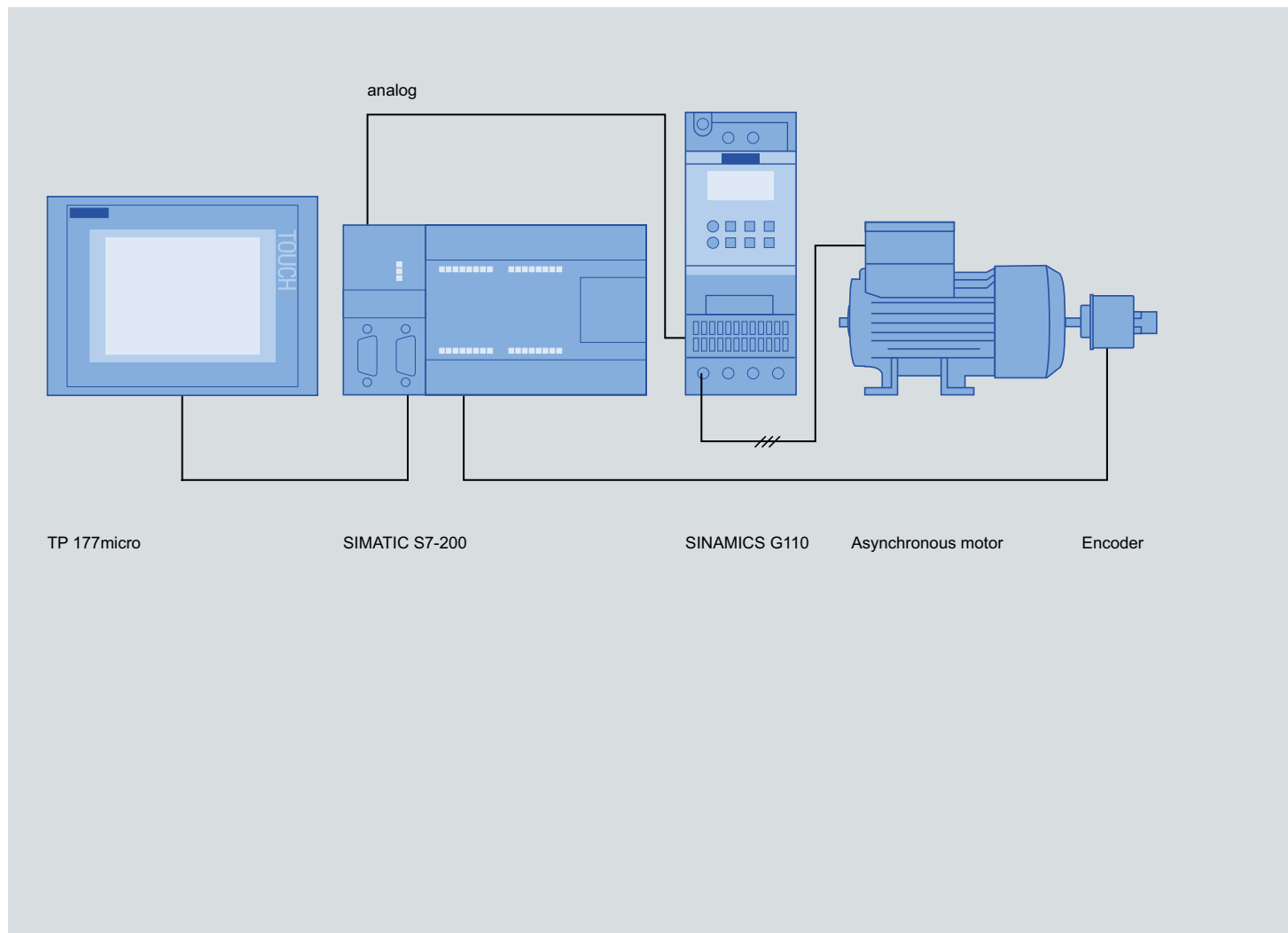
## Closed-Loop Positioning Control with standard drives

### Solving Positioning Tasks easily and optimally using SIMATIC S7-200 and the SINAMICS G110 Frequency Inverter

- Simple solution for positioning a linear axis (horizontal or vertical) or a rotary axis.
- Clearly reduced engineering overhead by providing a command library for STEP 7 Micro/WIN.
- The use of a particularly sturdy control algorithm ensures that a manual optimization of the position control is not necessary even if there are strong load fluctuations.
- Realization of the drive task without comprehensive control engineering know-how. The SIMATIC S7-200 takes the position control.
- Engineering and commissioning of S7-200 and closed loop positioning control with only one software tool: STEP 7 Micro/WIN.
- Cost-effective and high-performance solution with SINAMICS G110.
- In addition to your control task, the S7-200 can also solve multiple automation tasks.
- Visualization and control of the process via the TP 177micro Touch Panel.



MAS 1 Hardware components





### Application areas

The Micro Automation Set is particularly suitable for industrial applications requiring the positioning of objects. The product combination in conjunction with the software library enables a cost-effective positioning solution, for example in the following applications:

- Hoisting devices
- Cutters, e.g. for pipes
- Conveyors
- Feeders
- Lifts
- Rotary tables



Technical specification	
<b>Product</b>	
SIMATIC S7-200 (CPU 224XP) Supply voltage Interfaces	6ES7 214-2BD23-0XB0 85 ... 264 V AC 2 x RS485 communication interfaces
Touch Panel TP 177micro  Display Supply voltage Degree of protection to EN60529	6AV6 640-OCA11-0AX0  5.7" STN-LCD/Blue mode, Touchscreen 20.4 ... 28.8 V DC Front IP65, rear IP20
SINAMICS G110, frequency inverter Rated voltage Rated operating frequency Rated power	6SL3 211-0AB12-5UA1 200 ... 240 V AC $\pm 10\%$ 47 ... 63 Hz 0.25 kW
Low-voltage asynchronous motor Rated operating frequency Rated voltage Rated power with mounted 1XP8 001-1 rotary pulse encoder	1LA7 070-4AB10-Z H57 50 Hz                      60 Hz 230/400 V                460 V 0.25 kW                  0.29 kW 1024 pulses per revolution, HTL
SINAMICS G110, frequency inverter (alternatively)	6SL3 211-0AB12-5BA1
<b>Accessories</b>	
Basic Operator Panel (BOP) for SINAMICS G110	6SL3 255-0AA00-4BA1
<b>Configuration software/tools</b>	
WinCC flexible micro STEP 7 Micro/WIN SINAMICS MICROMASTER SIZER RS232 PC/PPI cable	6AV6 610-0AA01-3CA8 6ES7 810-2CC03-0YX0 6SL3 070-0AA00-0AGO 6ES7 901-3CB30-0XAO
<b>ABC-123:</b> You can find ordering information for variants in the Mall.	

# Micro Automation Set 9

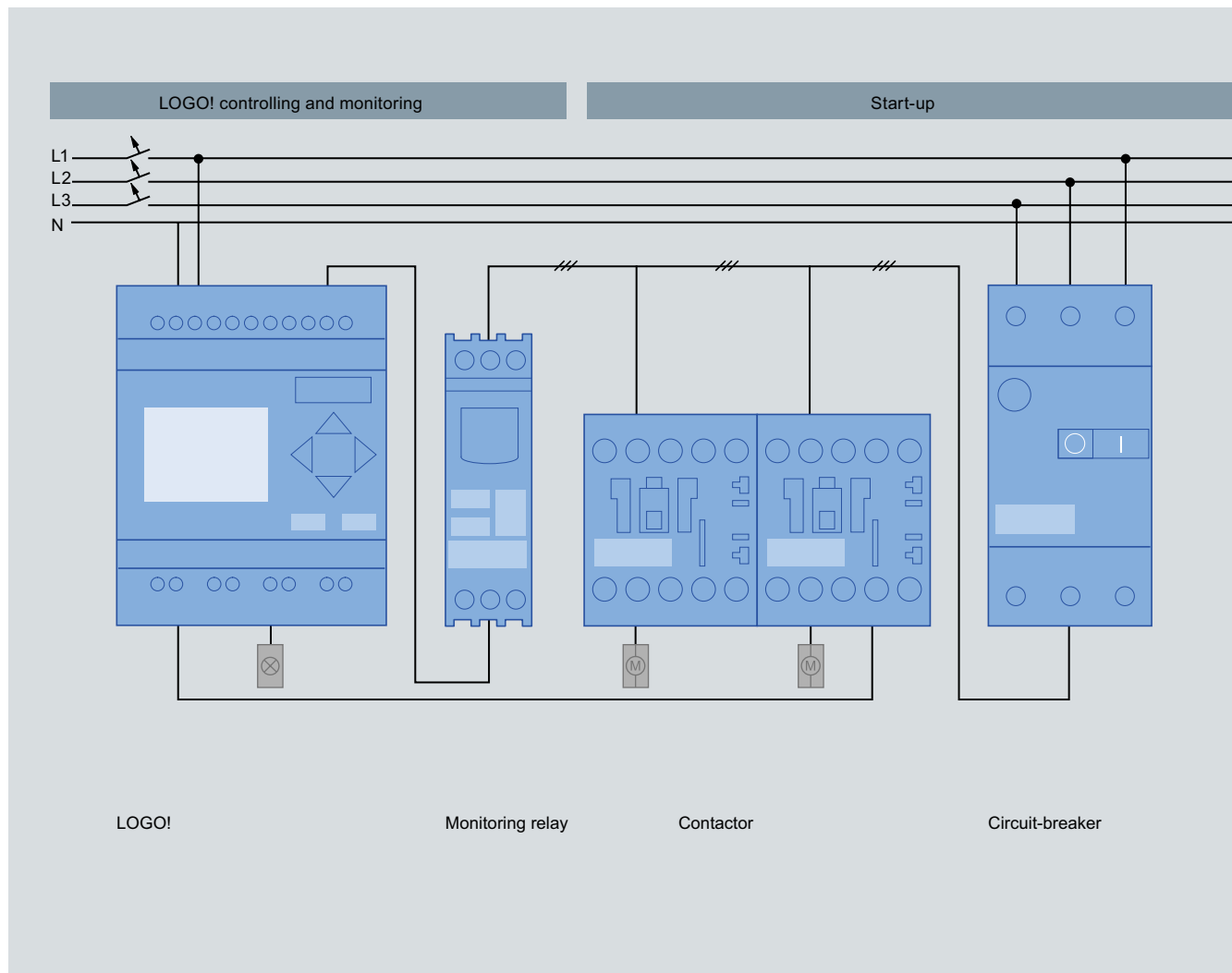
## Flexibly starting, controlling and monitoring motors

### Flexibly starting, controlling and monitoring motors using the SIRIUS monitoring relay and LOGO! logic module

- Every drive task, no matter whether it is simple or complex, requires that reliable operation of the motor is ensured. SIRIUS monitoring relays, which offer a wide range of monitoring functions, are an ideal solution.
- The intelligent linking of the monitoring and control functions of the SIRIUS components by the functions integrated in LOGO! rounds off the application.
- Direct presentation of status messages, plant and device statuses and much more on the LOGO! display enables quick analysis of the system and shorter downtimes.



MAS 9 Hardware components





### Application areas

The Micro Automation Set is especially suited for a wide range of applications in plant and machinery construction:

- Pump control
- Compressor control
- Crane systems
- Hoisting equipment
- Transport equipment
- Fan control
- Polling shutter gate control
- Exhaust systems
- Vacuum compressors
- Briquetting equipment
- Shredders

### Technical specification

#### Products

LOGO! Logic Module (230 RC) Supply voltage Digital inputs/outputs	6ED1 052- <b>1FB00-0BA6</b> 115/230 V AC/DC 8 DI/4 DO relays
SIRIUS monitoring relay 3UG4 Rated voltage Rated operating frequency Hysteresis	3UG4 <b>617-1CR20</b> Up to 690 V 50/60 Hz 1 ... 20 V
SIRIUS contactor 3RT10 (2x) Rated voltage Rated normal current Rated operating capacity	3RT1 0 <b>15-1AP02</b> Up to 690 V Up to 18 A Up to 19 kW
SIRIUS circuit-breaker 3RV Rated voltage Rated normal current Rated operating frequency	3RV <b>1 011-0KA10</b> Up to 690 V Up to 12 A 50/60 Hz

#### Accessories

SIRIUS kit for reversing contactor combination	3RA1 913-2A
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#### Configuration software/tools

LOGO! SoftComfort LOGO! PC cable	6ED1 058-0BA02-0YA0 6ED1 057-1AA00-0BA0
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# Micro Automation Set 22

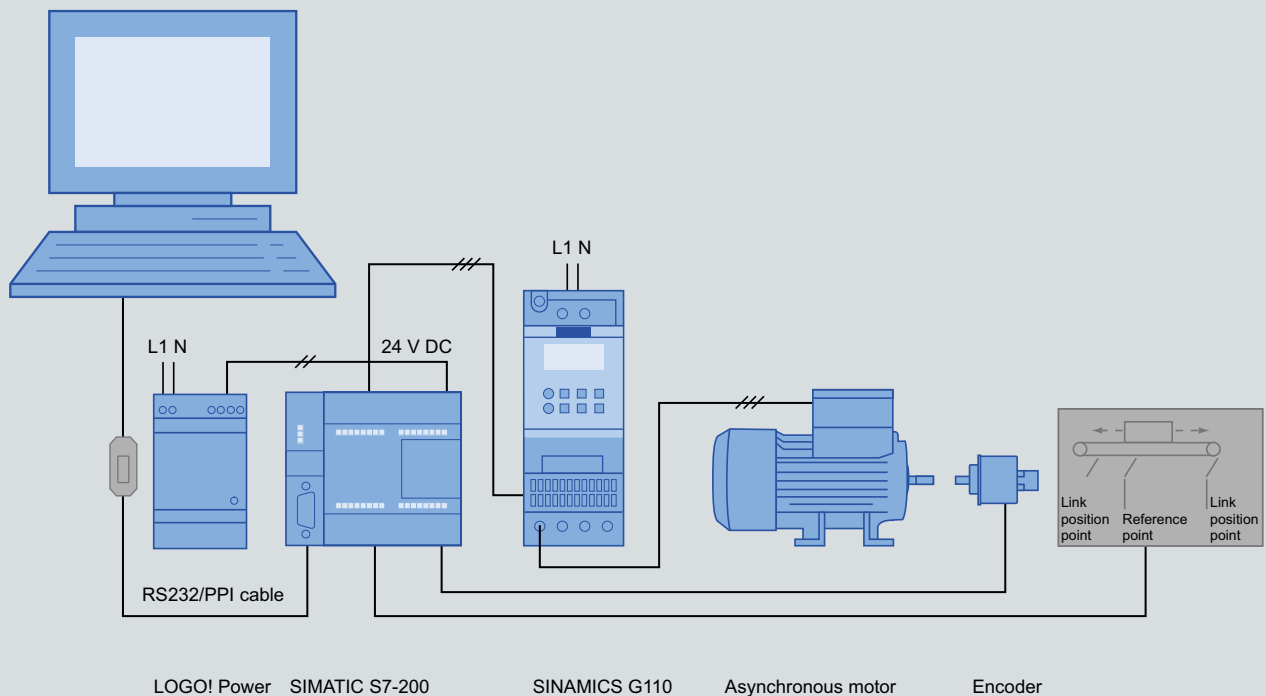
## Controlled positioning with standard drives

### Perform position control drive tasks using SIMATIC S7-200 and the SINAMICS G110 frequency inverters

- Ideal for simple and economic positioning tasks.
- Controlled positioning possible with linear and rotary axis.
- Fast and simple commissioning with the digital speed control specified in the SINAMICS G110 for rapid traverse and creep feed mode.
- Reliable operation due to the small number of clearly traceable parameters.
- Actual position value recording directly in the CPU without additional modules.
- Only a few steps to positioning – STEP7 Micro/WIN guides you through all phases of configuration.
- Parameterization of the SINAMICS G110 possible via the basic operator panel (BOP) or the STARTER commissioning tool.



MAS 22 Hardware components





### Application areas

This Micro Automation Set is particularly suitable for the low-cost and user-friendly position control, making it ideal for the following applications:

- Gate controls
- Feeders
- Material transport
- Turntables
- Advertising hoardings
- Conveyors, conveyor systems



### Technical specification

#### Product

LOGO!Power (24 V/1.3 A), primary switched power supply  
Supply voltage  
Output voltage  
Output current

6EP1 3<sup>3</sup>1<sup>1</sup>-1<sup>1</sup>SH0<sup>2</sup>  
85 ... 264 V AC  
24 V DC  
1.3 A

SIMATIC S7-200 (CPU 221)  
Supply voltage  
Inputs/outputs  
Interfaces

6ES7 2<sup>1</sup>1<sup>1</sup>-0<sup>0</sup>AA<sup>2</sup>3<sup>3</sup>-0<sup>0</sup>X<sup>1</sup>B<sup>0</sup>  
24 V DC  
5 DI/4 DO  
1 x RS485 communication interface

WinCC flexible PC Runtime (Software)

6AV6 613-1BA51-3CA0

SINAMICS G110 frequency inverter  
Rated voltage  
Rated operating frequency  
Rated power

6SL3 2<sup>1</sup>1<sup>1</sup>-0<sup>0</sup>AB<sup>1</sup>1<sup>1</sup>-2<sup>2</sup>BA<sup>1</sup>  
200 ... 240 V AC ±10%  
47 ... 63 Hz  
0.12 kW

Low-voltage asynchronous motor  
Rated operational voltage  
Rated operating frequency  
Rated power

1LA7 0<sup>0</sup>6<sup>0</sup>-4<sup>4</sup>AB<sup>1</sup>1<sup>0</sup>  
230/400 V  
50/60 Hz  
0.12 kW

Incremental encoder  
Input voltage  
Current consumption  
Maximum resolution

6FX2 0<sup>0</sup>1<sup>1</sup>-4<sup>4</sup>SA<sup>5</sup>5<sup>0</sup>  
10 ... 30 V DC  
150 mA  
500 pulses per revolution

#### Accessories

WinCC flexible Advanced  
STEP7 Micro/WIN  
RS232/PPI cable  
Basic Operator Panel (BOP) for SINAMICS G110

6AV6 613-0AA51-3CA5  
6ES7 810-2CC03-0YX0  
6ES7 901-3CB30-0XA0  
6SL3 255-0AA00-4BA1

# Micro Automation Set 23

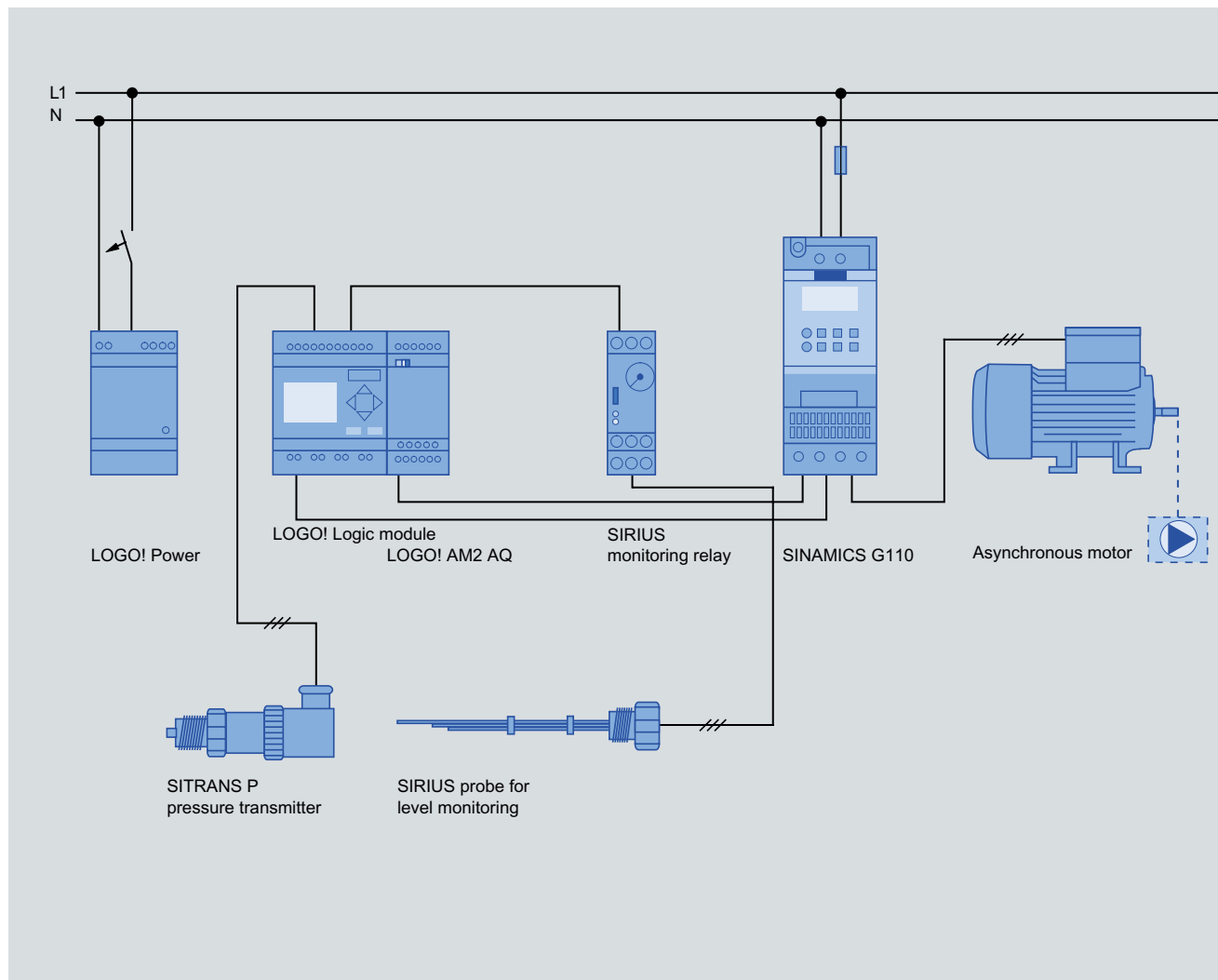
## PI controller for simple applications – Optimum control of motor speeds

Perform control- and speed-dependent drive tasks using the LOGO! logic module and SINAMICS G110 frequency inverters

- Low-cost and continuous speed control.
- Drive tasks from the SINAMICS G110 can be easily and directly connected to the sensor and control functions from the LOGO!
- Complete transparency in relation to the asynchronous motor based on the comprehensive protection and monitoring functions of the SINAMICS G110.
- Energy efficient because the motor power is adapted to the required consumption.
- Direct display of messages and device status with the integrated display on the LOGO!
- Simple parameter changes to the control functions of the LOGO! with integrated operating options.



MAS 23 Hardware components





### Application areas

This Micro Automation Set is particularly suitable for low-cost and user-friendly control of motor speeds, making it ideal for the following applications:

- Water/waste water systems
- Filling systems
- Building systems
  - pump control
- Machine control
  - vacuum systems
  - mixing machines

### Technical specification

#### Product

LOGO!Power (24 V/1.3 A), primary switched power supply Supply voltage Output voltage Output current	6EP1 331-1SH02 85 ... 264 V AC 24 V DC 1.3 A
LOGO! Logic module (12/24 RC) Supply voltage Inputs/outputs	6ED1 052-1MD00-0BA6 10.8 ... 28.8 V DC 8 DI/4 DO
LOGO! Expansion module (AM2 AQ) Supply voltage Analog outputs	6ED1 055-1MM00-0BA0 24 V DC 2
SIRIUS monitoring relay Supply voltage Sensitivity	3UG4 501-1AW30 230 V AC 5 ... 100 kOhm
SINAMICS G110 frequency inverter Rated voltage Rated operating frequency Rated power	6SL3 211-0AB21-5AA1 200 ... 240 V AC ±10% 47 ... 63 Hz 0.12 ... 1.5 kW
Low-voltage asynchronous motor Rated voltage Rated operating frequency Rated power	1LA7 0B3-2AA10 230/400 V 50/60 Hz 0.12 ... 1.5 kW
SITRANS P pressure transmitter	7MF1 564-3BB10-1AA1
SIRIUS probe for level monitoring	3UG3 207-3A
<b>Accessories</b>	
Miniature circuit-breaker LVHRC fuse DIN rail 35 mm Basic Operator Panel (BOP) for SINAMICS G110	5SX2 116-6 3NA3 810 6ES5 710-8MA11 6SL3 255-0AA00-4BA1
<b>Configuration software/tools</b>	
LOGO! SoftComfort LOGO! PC cable	6ED1 058-0BA02-0YA0 6ED1 057-1AA00-0BA0

# Micro Automation Set 26

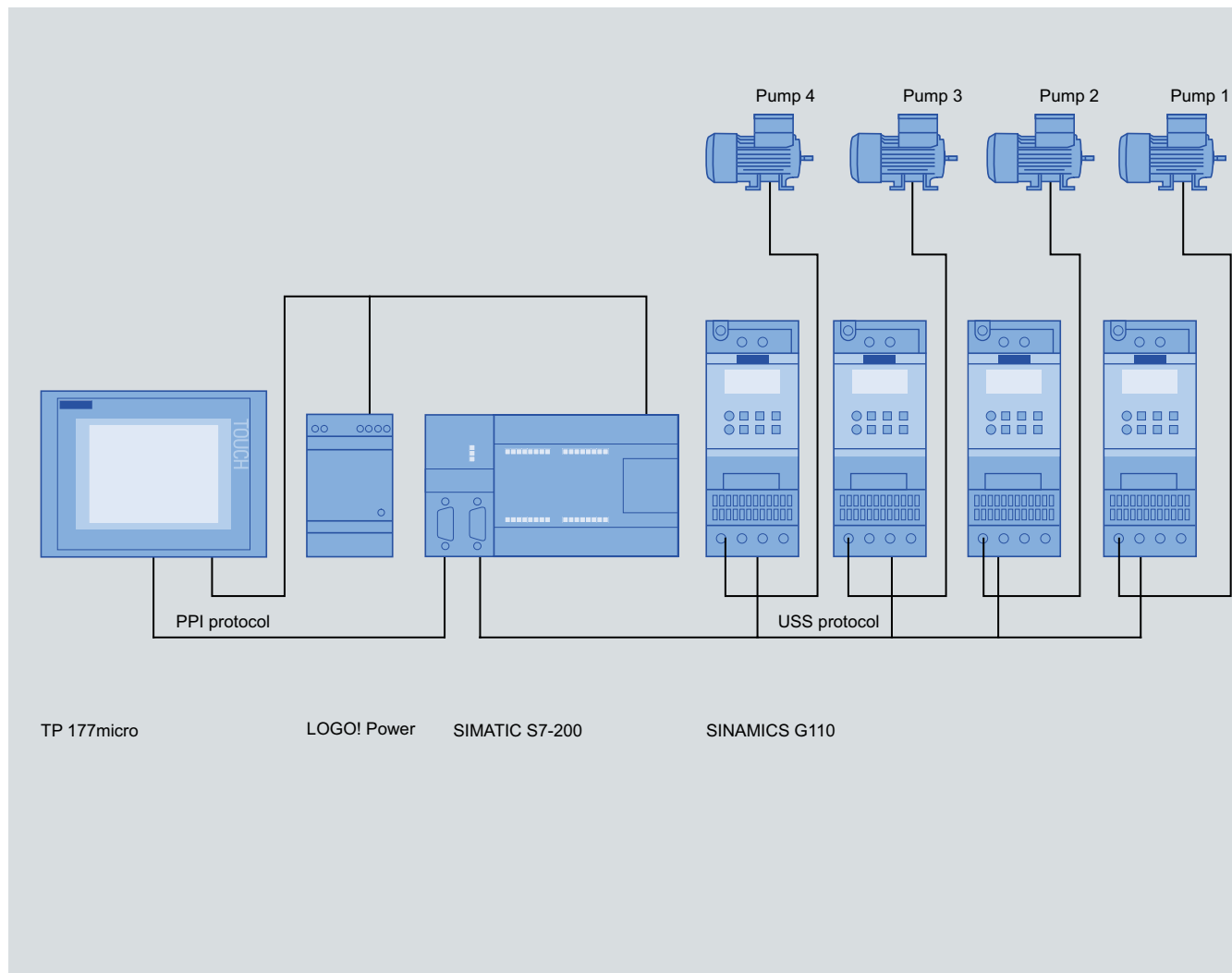
## Simple networking and cascading of drives

### Continuous adjustment of motor power with SIMATIC S7-200, 4 x SINAMICS G110 and TP 177micro

- Networking and cascading of drives without additional modules.
- The motor power can be adjusted continuously in accordance with demand, thus saving energy.
- All drives in the network can be controlled via a central SIMATIC S7-200 CPU using USS communication.
- USS communication between the inverters and the PLC can be programmed using off-the-shelf function blocks; they are available in the form of a library and are used for control and speed setting.
- Protection mechanisms for the motor are integrated into the SINAMICS G110.
- The fan-free design of the inverter (up to 750 W) guarantees freedom from wear and tear.



MAS 26 Hardware components





### Application areas

The Micro Automation Set is particularly suitable for applications with several interconnected drives. Requirements for a dynamic speed change or controllable/adjustable speed can easily be met, e.g.:

- Ventilator groups
- Compressor groups/cascades
- Pump groups/cascades



### Technical specification

#### Product

LOGO!Power (24 V/1.3 A), primary switched power supply Supply voltage Output voltage Output current	6EP1 3 <sup>3</sup> 1 <sup>1</sup> -1 <sup>1</sup> SH0 <sup>2</sup> 85 ... 264 V AC 24 V DC 1.3 A
SIMATIC S7-200 (CPU 224 XP) Supply voltage Inputs/outputs Interfaces	6ES7 2 <sup>1</sup> 4 <sup>1</sup> -2 <sup>2</sup> AD2 <sup>3</sup> -0 <sup>0</sup> X <sup>0</sup> B <sup>0</sup> 85 ... 264 V AC 14 DI/10 DO and 2 AI/1 AO 2 x RS485 communication interfaces
Touch Panel TP 177micro  Display Supply voltage Degree of protection to EN60529	6AV6 640-0CA11-0AX0  5.7" STN-LCD/Blue mode, Touchscreen 20.4 ... 28.8 V DC Front IP65, rear IP20
SINAMICS G110, frequency inverter Rated operational voltage Rated frequency Rated power	6SL3 21 <sup>1</sup> -0 <sup>0</sup> AB1 <sup>1</sup> 1 <sup>1</sup> -2 <sup>2</sup> UB1 <sup>1</sup> 200 ... 240 V AC ±10% 47 ... 63 Hz 0.12 kW
Low-voltage asynchronous motor Rated voltage Rated operating frequency Rated power	1LA7 <sup>0</sup> 6 <sup>0</sup> -4 <sup>4</sup> AB1 <sup>1</sup> 0 <sup>0</sup> 230/400 V 50/60 Hz 0.12 kW

#### Accessories

Operator panel for SINAMICS G110 (optional) Adapter for securing the SINAMICS inverter to the DIN rail PROFIBUS cable (for connecting the inverter to the controller) PROFIBUS connector with programming device connector Filter with low leakage currents Cable from Touch Panel to CPU (off-the-shelf PB cable) Connecting cable for serial interface (direct access) Connecting cable for USB port (direct access)	6SL3 255-0AA00-4BA1 6SL3 261-1BA00-0AA0 6XV1 830-0EH10 6ES7 972-0BB12-0XA0 6SE6 400-2FL01-0AB0 6XV1 830-1CH30 6ES7 901-3CB30-0XA0 6ES7 901-3DB30-0XA0
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#### Configuration software/tools

WinCC flexible micro STEP 7 Micro/WIN	6AV6 610-0AA01-3CA8 6ES7 810-2CC03-0YX0
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## Get more information

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Subject to change without prior notice  
Order No.: 6ZB5310-0NP02-0BA0  
Dispo 26101  
BS 0908 10. ROT 14 En / 801161  
Printed in Germany  
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