SIEMENS S7-215 DP

Overview

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- The bus specialist with optimum communication capability
- With two communications interfaces:

  1 x PPI, 1 x PROFIBUS-DP

- Can be used as a PROFIBUS-DP slave
- Maximum real-time performance for secure control of even the fastest processes in the PROFIBUS-DP network (data transmission speed 12 Mbit/s)
- Implementation of simple preprocessing
- Can be programmed via PROFIBUS-DP with STEP 7-Micro/Win V3.0

Application

The CPU 215 is the communication specialist of the SIMATIC S7-200 family.

- With optimum communications capabilities with other devices of the family through the PPI and PROFIBUS interfaces and maximum real-time performance; for safe control of fastest processes, in paticular, in the PROFIBUS-DP network (data transmission rate: 12 Mbit/s), as well as for simple preprocessing.

Design

Mechanical features

- Horizontal or vertical assembly on standrad rail or panel mount with integrated screwholes
- Removeable terminal blocks (optional)

The CPU 215 features:

- Integrated 24 V transmitter/load power supply; for the direct connection of sensors and transmitters. With 400 mA it can also be used as a load power supply.
- 2 device variants;

  With different supply and control voltages

- On-board digital inputs/outputs;

14 inputs and 10 outputs

- Interrupt inputs;

  for extremely rapid reactions to increasing or decreasing process signal slopes

- High-speed counters;

  1 high-speed counter (2 kHz), which can be used as an up or down counter;
  2 high-speed counters (7 kHz each), with parameterizable enable and reset input, can be used as a simultaneous up and down counter with 2 separate inputs for connecting incremental encoders with 2 90^{o}-offset pulse trains

- Trouble-free expandability through digital and analog expansion modules (EMs)
- Simulator (optional);

  for the simulation of integrated inputs and the testing of user programs

- Analog potentiometers;

  2 analog potentiometers, can be used as a user-friendly setpoint adjuster during everyday operation, such as for setting timers

- Pulse outputs;

  2 high-frequency pulse outputs (max. 20 kHz);
  For use in positioning tasks and the control of frequency controlled motors and stepper motors via power circuits

- Real-time clock;

  For example for adding time stamps to messages, for registering machine running times or for the time-control of processes

- EEPROM cartridge (optional);

  allows rapid program change (even without a programming device) and additional program archiving

- Battery module for long-duration battery backup;

  To increase holding time to typically 200 days (10 years "shelf life"). Without the battery

module, user data (e.g. memory bit statuses, data blocks, times, counters) are saved by an internal high-power capacitor for around 5 days. The battery module is inserted into the memory cartridge port.

Device variants				
Variant	Supply voltage	Input voltage	Output voltage	Output current
DC outputs	24 V DC	24 V DC	24 V DC	0.5 A, additional 1 A, transistor
Relay output	120 to 230 V AC	24 V DC	24 V DC/ 24 to 230 V AC	2 A, relays

Functions

- Extensive set of instructions;

  A multiplicity of **basic operations** such as binary logic operations, result allocation, save, count, create times, load, transfer compare, shift, rotate, create complement, call sub-program, integrated communication commands (eg. NETE, NETW, RECEIVE-Freeport) and **enhanced functions** such as pulse-duration modulation, pulse sequence function, arithmetic functions, floating point arithmetic, PID closed-loop control, jump functions, loop functions and code conversions simplify the programming task

- Counting;

  user-friendly counting functions in conjunction with the integrated counters open up new application areas for the user.

- Interrupt processing;
- slope-controlled interrupts (triggered by increasing or falling process signal slopes at interrupt inputs) allow extremely rapid reactions to process events
- Time-controlled interrupts can be set in at 1 ms increments from 5 ms to 255 ms.
- Counter interrupts can be triggered when a specified value is reached or if the counter direction changes.
- Communication interrupts allow the rapid and easy exchange of information with peripheral devices such as printers or bar code readers
- Direct interrogation and control of inputs/outputs;

  Inputs and outputs can also be interrogated and set independently of the cycle. Thus the controller can react quickly to process events (e.g. direct reset of outputs in the case of an interrupt event).

- Password protection;

The three-level password protection concept allows efficient protection of know-how. The protection concept has the following options for access to the user program:

- Full access: The program can be altered as desired.
- Read only: The program is protected against unauthorized alteration. Testing, adjustment of system parameters and copying of the program is allowed.
- Complete protection: The program is protected against alteration and unauthorized readout and copying. Adjustment of parameters is allowed.
- Test and diagnostic functions;

User-friendly functions support testing and diagnostics: the complete program is run over a predetermined number of cycles and analyzed. Internal parameters such as memory bits, timers or counters are logged at the same time over a maximum of 124 cycles.

- "Forcing" of inputs and outputs during test and diagnostic operation;

Inputs and outputs can be set independently of cycle and thus permanently, for example to test the user program.

Using the PPI interface for programming

To use the PPI interface to program the CPU 215:

- The STEP 7 Micro/Dos V1.3, STEP 7 Micro/WIN16 V2.1, or the STEP 7 Micro/WIN32 V3.0 programming software is available. This software can be used to program all CPU functions. You need the PC/PPI cable if you use the programmer/PC serial interface for programming. You can use the CP5511 or CP5611 SIMATIC CP for programming when you use the STEP 7 Micro/WIN32 V3.0 programming software. Data transmission rates up to 19.2 kbit/s are then possible.

Using the PROFIBUS DP for programming:
You can use the PROFIBUS DP to program the CPU 215 when you use the STEP 7 Micro/WIN32 V3.0 programming software and the CP5511 or CP5611 SIMATIC CP. Data transmission speeds up to 12 Mbit/s are possible.