SIEMENS 6ES7 288 1ST40 0AA0

Siemens ST40 S7-200 Smart PLC Instruction Manual

Model: 6ES7 288 1ST40 0AA0

1. Introduction

This manual provides essential information for the installation, operation, and maintenance of the Siemens ST40 S7-200 Smart PLC. The SIMATIC S7-200 SMART PLC is an upgraded version of the classic S7-200 PLC, designed for small to medium-sized automation tasks. Please read this manual thoroughly before using the device to ensure proper functionality and safety.

Figure 1: Front view of the Siemens ST40 S7-200 Smart PLC, showing the main unit with various ports and indicators.

2. Safety Information

Always observe the following safety precautions to prevent injury and damage to the device:

- Ensure the power supply is disconnected before making any connections or disconnections.
- Only qualified personnel should install, operate, and maintain this device.
- Protect the device from moisture, dust, and extreme temperatures.
- Do not open the device enclosure unless specifically instructed by Siemens documentation.
- Use only specified power supply voltages (DC 20.4-28.8V).

3. Product Features

The Siemens ST40 S7-200 Smart PLC offers robust features for industrial control applications:

- **Model No.:** CPU SMART ST40
- **CPU Power Supply:** DC 20.4-28.8V
- **Output Type:** 16 Bits Transistor outputs
- **Digital Input:** 24 Bits 24V DC Inputs
- **Program/Data Memory:** 40 KB
- Designed as an upgraded version of the classic S7-200 PLC.

Figure 2: Side view of the Siemens ST40 S7-200 Smart PLC, highlighting the product label with model number and power specifications.

4. Setup

Follow these steps for initial setup of your ST40 S7-200 Smart PLC:

1. **Mounting:** Securely mount the PLC on a DIN rail in a control cabinet, ensuring adequate ventilation.
2. **Power Connection:** Connect the DC 20.4-28.8V power supply to the designated power terminals. Observe polarity.
3. **Input Wiring:** Connect your digital input devices (e.g., sensors, switches) to the 24V DC input terminals. Refer to the wiring diagram for correct terminal assignments.
4. **Output Wiring:** Connect your output devices (e.g., relays, contactors) to the 16 transistor output terminals. Ensure proper load handling and protection.
5. **Communication Connection:** Connect the PLC to your programming device (PC) using the appropriate communication cable (e.g., RS485 via X20 port, if applicable).
6. **Software Installation:** Install the Siemens programming software (e.g., STEP 7 Micro/WIN SMART) on your PC.

Figure 3: Top view of the Siemens ST40 S7-200 Smart PLC, illustrating the various input and output terminals, including the RS485 X20 port.

5. Operating Instructions

Operating the ST40 S7-200 Smart PLC primarily involves programming and monitoring:

- **Programming:**

- Launch the Siemens programming software.
- Create a new project or open an existing one.
- Write your control logic using Ladder Diagram (LAD), Function Block Diagram (FBD), or Statement List (STL).
- Compile the program to check for errors.
- Download the compiled program to the PLC via the communication interface.

- **Monitoring:**
  - Use the software's monitoring functions to observe the status of inputs, outputs, and internal memory bits.
  - Online monitoring allows for real-time diagnostics and debugging.
- **Run/Stop Mode:** The PLC can be switched between RUN and STOP modes via the programming software or a physical switch if available on the module.

6. Maintenance

Regular maintenance ensures the longevity and reliable operation of your PLC:

- **Cleaning:** Periodically clean the exterior of the PLC with a soft, dry cloth. Do not use solvents or abrasive cleaners. Ensure power is off before cleaning.
- **Ventilation:** Ensure that ventilation openings are not obstructed to prevent overheating.
- **Connection Checks:** Regularly inspect all wiring connections for tightness and signs of corrosion.
- **Firmware Updates:** Check the Siemens support website for any available firmware updates for your PLC model. Follow official instructions for updating.
- **Backup:** Regularly back up your PLC programs to prevent data loss.

7. Troubleshooting

This section provides solutions to common issues you might encounter:

Problem	Possible Cause	Solution
PLC not powering on	Incorrect power supply voltage; Loose power connection; Faulty power supply.	Verify power supply (DC 20.4-28.8V); Check wiring; Test power supply unit.
Cannot connect to PLC from PC	Incorrect communication settings; Faulty cable; Driver issues.	Check COM port settings in software; Replace communication cable; Reinstall communication drivers.
Inputs not responding	Incorrect wiring; Faulty sensor; Program logic error.	Verify input wiring; Test sensor functionality; Review PLC program logic.
Outputs not activating	Incorrect wiring; Faulty output device; Program logic error; Overload.	Verify output wiring; Test output device; Review PLC program logic; Check for output overload.

For more complex issues, refer to the detailed Siemens S7-200 SMART PLC programming and hardware manuals or contact Siemens technical support.

8. Specifications

Detailed technical specifications for the Siemens ST40 S7-200 Smart PLC (Model: 6ES7 288 1ST40 0AA0):

Attribute	Value
Brand	SIEMENS
Manufacturer	SIEMENS AG
Model Number	6ES7 288 1ST40 0AA0
CPU Type	CPU SMART ST40
Power Supply	DC 20.4-28.8V
Digital Inputs	24 Bits 24V DC Inputs
Digital Outputs	16 Bits Transistor outputs
Program/Data Memory	40 KB
Color	GRAY
Date First Available	28 September 2018

9. Warranty & Support

Siemens products are manufactured to high quality standards. For specific warranty terms and conditions, please refer to the documentation provided with your purchase or visit the official Siemens website. Typically, Siemens offers a standard manufacturer's warranty against defects in materials and workmanship.
For technical support, product inquiries, or service requests, please contact Siemens customer service or your local Siemens representative. You can find contact information on the official Siemens website (www.siemens.com).