Fig. 1  S5-101R Programmable controller with 605R programmer

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DESCRIPTION</td>
<td></td>
<td>4.</td>
</tr>
<tr>
<td>1.1 Application</td>
<td>1.1</td>
<td>4.1</td>
</tr>
<tr>
<td>1.2 Design</td>
<td>1.1</td>
<td>4.2</td>
</tr>
<tr>
<td>1.3 Principle of operation</td>
<td>1.2</td>
<td>4.3</td>
</tr>
<tr>
<td>2. INSTALLATION</td>
<td></td>
<td>5.</td>
</tr>
<tr>
<td>2.1 Mechanical construction</td>
<td>2.1</td>
<td>5.1</td>
</tr>
<tr>
<td>2.2 Electrical design</td>
<td>2.2</td>
<td>5.2</td>
</tr>
<tr>
<td>2.2.1 Installation guidelines</td>
<td>2.2</td>
<td>5.3</td>
</tr>
<tr>
<td>2.2.2 Terminal assignments</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>3.1 Controls and displays</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>3.2 The &quot;Run&quot; and &quot;Stop&quot; modes</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>3.3 Power-up</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>3.4 Using the memory modules</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>3.5 Start-up</td>
<td>3.5</td>
<td></td>
</tr>
</tbody>
</table>

4. MAINTENANCE AND REPAIRS
4.1 Error/fault diagnostics
4.2 Changing the backup battery
4.3 Interface assignments

5. TECHNICAL SPECIFICATION
5.1 General data
5.2 CPU/memory submodule
5.3 I/Os

6. SPARE PARTS
1. Description

1.1 Application

The 101R is a programmable controller (PC) of the SIMATIC S5 system. It was developed as a compact PC for automation tasks in the lower performance range as an economical replacement for as few as 10 relays or contactors. The PC can be used for applications involving logic control with timing and counting functions. The PC is programmed with the hand-held 605R programmer or with the 655R CRT-based programmer in the ladder diagram (R-LAD) method of representation.

1.2 Design

Compact PC for cabinet and wall mounting.

Screw-type terminals are used for all connections as in contactor systems (SIGUT SYSTEM).

Internal power supply for sensors; no external sensor supply therefore necessary.

Signal status display of the inputs. Inputs 24 V DC floating.

Receptacle for external memory submodule.

Connector for 605R or 655R programmer (TTY interface).

The programmer connector can be plugged in or withdrawn with the power on.

Backup battery compartment.

Output signal status display.

Relay outputs.

Power terminals.
### 1.3 Principle of operation

**CENTRAL PROCESSING UNIT (CPU)**

The CPU consists of a single-chip microprocessor and performs the following functions:

- Program processing
- Scanning of inputs and output (coils)
- Processing of timers and counters
- Controlling of outputs
- Programming of the memory submodule (EEPROM only)
- Servicing the serial port when a programmer is connected

**INTERNAL MEMORY**

The user program is stored in the internal memory. The microprocessor always processes the program from this memory. The user program is retained for at least 3 years if a backup battery is used.

**EXTERNAL MEMORY SUBMODULE**

The user program is dumped in the memory submodule for long-term storage. Both an EPROM and an EEPROM submodule are available:

- The EEPROM submodule, is programmed direct on the PC with the aid of the programmer.
- The EPROM submodule can only be programmed direct on the 655R programmer and on the 105R PC using a programming adapter

**Note:**
The power supply must be switched off before a memory submodule is plugged in or withdrawn.
The program is stored in the PC memory in the form of program elements, which are scanned in sequence. When the last element has been scanned, the first is then scanned again. This is called cyclic program scanning.

All inputs are interrogated before a program scan and stored in the process input image, part of the internal memory (1.). During program scanning, only this process input image is accessed (2.). While the program is running, the output statuses are first assigned to the process output image. After the final program element has been scanned, this process output image is transferred to the outputs (3.).

The PC has a scan time check for self-monitoring. Before a jump is made back to (1), the scan time monitor is informed that the program is being correctly processed. If a fault occurs, the monitor disables all outputs after max. 300 ms and the PC enters the "STOP" state.
2. Installation

2.1 Mechanical construction

Fig. 7: Dimension diagram of the 101R PC

Mounting arrangements

The 101R is attached to a vertical mounting surface by means of four M4 bolts.

In order to avoid the accumulation of heat, make sure
- that the maximum angle of inclination is not exceeded
- that the minimum clearance between units mounted one above the other is observed (no clearance is necessary if the units are mounted side by side).

Fig. 8: Wall mounting arrangements
2.2 Electrical design

Screw-type terminals are used on the 101R for all electrical connections. Each terminal can take two conductors with the following cross-sectional areas:

<table>
<thead>
<tr>
<th>Type</th>
<th>Area</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid conductors</td>
<td>1 ... 2.5 mm²</td>
<td>AWG 26 ... 13</td>
</tr>
<tr>
<td>Stranded conductors</td>
<td>0.75 ... 1.5 mm²</td>
<td>AWG 18 ... 15</td>
</tr>
</tbody>
</table>

(with core and sleeves)

The screws should be tightened with a torque of between 80 and 120 Ncm. 10 mm of insulation should be removed from the end of the leads.

2.2.1 Installation guidelines

The PC and field devices (sensors and actuators) should be connected up as shown below:

![Diagram](image)

Fig. 9: Installation schematic for the 101R PC
When connecting up the PC, the following points should be noted:

- A common main switch (1) or isolating facility must be provided for the PC, sensors and actuators.

- The PC power connection must be fused (max. fuse rating 6 A) (2). An additional power switch is recommended in order not to have to open the main switch when replacing the memory submodule.

- A smaller conductor cross-sectional area can be used without fuses (3) for the power connection of the control circuits if the connecting line is less than 3 m long and is proof against earth faults and short-circuits.

- The power leads and I/O cabling must be run separately.

- A power supply unit (4) must be provided for the 24 V control circuits. 24 V lines must not be combined in a common cable with lines carrying higher voltages. The sensors (5) can be powered by the 24 V DC/300 mA power supply unit in the PC (connection I) or by an external 24 V DC power supply unit (connection II).

- In control circuits with more than 5 actuating coils, galvanic isolation by means of a control transformer (6) is recommended.

- Auxiliary circuits should be earthed either at one end (actuators and sensors must be arranged accordingly) or non-earthed auxiliary circuits with an insulation monitor must be provided. Earthed operation by means of a strap (7) between the protective earth conductor and the power supply unit or transformer is to be preferred.

- When connecting up the signal leads or bundling such leads, make sure that the ventilating slots are not covered. This applies in particular to the ventilating slots above the screw terminals.

- Cables must not be run in the immediate vicinity of the frontplate.

- The programmable controller has a high immunity to noise so that contactors can normally be operated in its immediate vicinity without having to take any additional measures to reduce noise.

- Note that the relay contacts of the outputs are fitted with varistors. (Max. leakage current 1 mA at 275 V\textsubscript{rms}).
2.2.2 Terminal assignments

Full complement with 6ES5 101-8RA11
Half complement with 6ES5 101-8RB11

Fig. 10: Terminal assignments of the 101R programmable controller

Line connection: 220 V or 240 V AC

U1: Phase (220 V DC)
U2: Phase (240 V AC)
N: Neutral
+: Protective earth conductor

Sensor power supply: (24 V DC (max. 300 mA)

The -24 DC terminal is connected internally with the inputs:
If an external 24 V power supply unit is used, its -24 V DC terminal must be connected to the -24 V DC terminal of the PC.
The +24 V DC terminal of the PC remains free in this case.

The plastics casing of the PC has a metallized inner surface so that the protective earth conductor must be connected at all costs.
3. Start-up and Operation

3.1 Controls and displays

The green "5V" LED (1) indicates that the internal power supply for the PC is available.

The red "Stop" LED (2) and the green "Run" LED (3) indicate the two operating states of the PC.

The "Stop" and "Run" operating states are selected with the mode selector (4).

The green LEDs marked 0.0 ... 2.3 (5) light up when the 24 V signal is applied to input terminals 1 ... 20 and thus indicate the signal state of the inputs direct.

The green LEDs marked 0.0 ... 1.3 (6) are connected in parallel with the excitation coils of the output relays and indicate the signal status of output relays and indicate the signal status of outputs (coils) 0.0 ... 1.3.

Fig. 11: Controls and displays of the 101R PC
3.2 The "Run" and "Stop" modes

The 101R PC has two operating modes - "Stop" and "Run".

In the "Stop" mode - red LED (2) illuminated - the user program is not processed. All outputs or coils are disabled in this mode. The PC automatically enters the "Stop" state when faults or errors occur that prevent proper processing of the program.

The "Stop" state of the PC can be left again by moving the mode selector (4) to the "Run" position. The red LED (2) darkens and the green LED (3) lights up. This can take up to 1 s, depending on the length of the program. During this time, the user program is translated into microprocessor code. When the green LED (3) lights up, the program is being processed.

When the mode selector (4) is in the "Run" position, the operating state of the PC can be modified additionally by the "PC STOP" and "PC START" functions of the programmer.

3.3 Power-up

The 101R PC can be taken into service without a programmer being necessary. For start-up, the following conditions must be fulfilled:

- The PC must have a valid program in the internal program memory (RAM) or in the memory submodule plugged into it
- The mode selector must be in the "RUN" position.

An automatic cold restart after power-up requires:

- that the PC has a valid program (see above)
- that the mode selector is in the "RUN" position
- that the "AUTO RESTART" bit is set to "1" in the user program.

The PC remains in the STOP state after power-up if at least one of the following conditions has been fulfilled.

- Switch in STOP position
- The PC was in the STOP state before power-down
- The PC can find no valid program in the internal RAM or in the plugged-in module
- Program errors
- AUTO RESTART bit has been set to "0"
- Before power-down an entry was made in the program in the internal program memory and a module was plugged in.
- There is no back-up battery and the "FLAGS RETENTIVE" bit is set to "1" in the program.

The cause of the STOP state is displayed in plaintext using the PC DIAGNOSTIC function on the 605R programmer or the PC INFO function on the 655R programmer.
3.4 Using the memory submodule

The 101R PC has three possible types of memory:

- the internal program memory (RAM) without submodule
- additional EPROM submodule
- additional EEPROM submodule

The memory submodules are designed for long-term program storage or as copying submodules if one memory submodule is to be used for several PCs.

<table>
<thead>
<tr>
<th></th>
<th>Internal RAM</th>
<th>EPROM submodule</th>
<th>EEPROM submodule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program generation with programmer</td>
<td>yes(^1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storing the program</td>
<td>without additional measures in the PC</td>
<td>only direct on the 655R programmer and on the 105R PC using an adapter</td>
<td>with the STORE PROGRAM programmer function</td>
</tr>
<tr>
<td>Storage time</td>
<td>at least 3 years if battery is inserted (option)</td>
<td>no limit</td>
<td>no limit</td>
</tr>
<tr>
<td>Program erase</td>
<td>Erase program (general reset)</td>
<td>with UV lamp</td>
<td>not necessary; it is overwritten when the program is stored</td>
</tr>
<tr>
<td>Retentive flags</td>
<td>With at least 3 years back-up if a lithium battery has been inserted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 11: Using the individual memory types

\(^1\) Only possible if no memory submodule has been inserted
A program can be changed without using a programmer. The memory submodule is replaced in the following order:

- Switch off power
- Replace memory submodule
- Switch on power.

After power-up, the contents of the memory submodule are transferred to the internal program memory.

If, before the program was changed, an entry was made in the current program in the internal RAM using the programmer with the functions

- INPUT/DISPLAY
- ERASE PB
- FLAGS RETENTIVE
- AUTO RESTART,

the PC expects the next step to be the storing of the modified program on a memory submodule.

The contents of the next submodule plugged in are consequently not transferred to the internal program memory on power-up.

The contents of the memory submodule can only be read into the internal program memory when either the STORE PROGRAM function or the ERASE PROGRAM function have been successfully completed.
### 3.5 Start-up

On PC start-up the following sequence of operator procedures must be observed.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Operator procedure</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| 101R PC dead, i.e. the main switch is open. | - Check power terminals (PE conductor must be connected)  
- Check whether all screw terminals are properly tightened  
- Make sure that there are no connections between 24 V lines and lines carrying higher voltages.  
- Withdraw the memory submodule | Visual check of the system. |
| Disconnect fuses for sensors and actuators. Switch off power circuits of the actuators. Close the main switch (see Fig. 9) | - Switch PC to "Stop" without memory submodule and connect the 605R or 655R programmer.  
- Reset the PC with the "ERASE PROGRAM" programmer function) and then set the PC to "Run". | When the main switch is closed, the green "5V" and red "Stop" LEDs light up.  
The red "Stop" LED darkens and the green "Run" LED lights up |
| Insert the fuses for the sensors. The fuses for the actuators and power circuits remain disconnected. | - Actuate all sensors one after the other. | If the sensors are properly connected, the corresponding LEDs at inputs I0.0 ... I2.3 will light up. |
| Insert the fuses for the actuators. The power circuits for the actuators remain disconnected (Fig. 9). | - Each output of the I/Os can now be driven with the STATUS/SET programmer function. | The LEDs of the set outputs must light up and the switch positions of the relevant actuators must change. |
| The power circuits for the actuators remain disconnected. | - Put the PC to "Stop"  
- Enter the program with the aid of the programmer (INPUT/DISPLAY function) or plug in memory submodule.  
- Test the program with the PWR FLOW/FORCE programmer function  
- Store program on memory submodule if necessary | The red LED on the CPU lights up.  
Program documentation should be produced for the information of third parties. |
| When the program has been fully tested, switch on the power circuits for the actuators. | - Put the PC to "Run" | The PC must now process the program properly. |
4. Maintenance and Repairs

4.1 Error/fault diagnostics

If errors occur when developing and testing the program, detailed error information is provided by the programmer. This is described in more detail in the User Instructions of the respective programmer. The programmer has the following diagnostic functions for testing the program and for troubleshooting:

- PWR FLOW/FORCE
  (see Programming Instructions, Section 3.0)

- STATUS/SET
  (see Programming Instructions, Section 3.2)

- PC DIAGNOSTIC

In the event of a fault on the 101R, the following troubleshooting procedure is recommended:

```
<table>
<thead>
<tr>
<th>START</th>
</tr>
</thead>
</table>
| Put mode selector to "STOP"
| Switch on power |
| Green "+5V" LED lit? |
| No |
| No |
| Check mains voltage |
| Check mains fuse and terminals |
| Yes |
| Check fuse for 24V DC sensor voltage |
| Check sensor wiring |
| No |
| Switch on sensors |
| Do input LEDs light up? |
| Yes |
| Put mode selector to "RUN" |
| No |
| Yes |
| PC enters "RUN" mode |
| No |
| PC enters "STOP" status during operation |
| Yes |
| Wrong or no program processing? |
| No |
| Yes |
| Check user program |
| Program executes satisfactorily |
```

Fig. 12: Troubleshooting procedure
If the PC does not enter the "RUN" state when the power is switched on or the mode selector is actuated or should it leave the "RUN" state during normal processing, the cause of the fault can be investigated with the "PC DIAGNOSTIC" programmer function. If the function cannot be called and FO* appears in the display of the programmer, the PC must be switched off and switched on again and this function must be called again.

<table>
<thead>
<tr>
<th>Error display</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP PC</td>
<td>Mode selector is in the &quot;Stop&quot; position or it was in this position before power-down</td>
<td>Move mode selector to &quot;Run&quot;.</td>
</tr>
<tr>
<td>STOP PG</td>
<td>PC STOP programmer function executed</td>
<td>Execute &quot;PC Run&quot; programmer function or put mode selector on PC to RUN</td>
</tr>
<tr>
<td>STOP POWER DOWN</td>
<td>Line voltage failure; AUTO RESTART bit is set to &quot;0&quot; in the program</td>
<td>Operate mode selector</td>
</tr>
<tr>
<td>CODE ERROR PB 16</td>
<td>PC can find no valid program</td>
<td>Erase PC program or plug memory module in with valid program</td>
</tr>
<tr>
<td>CODE ERROR PBx</td>
<td>Program error in PBx or: if no error is to be found, internal program memory overflow</td>
<td>Correct or re-enter PBx Optimize program, use fewer PBs and nodes</td>
</tr>
<tr>
<td>RAM &lt;&gt; MODULE</td>
<td>Program in RAM has been modified and memory submodule plugged in</td>
<td>Store program in memory submodule or erase PC program</td>
</tr>
<tr>
<td>FLAGS RETENTIVE?</td>
<td>FLAGS RETENTIVE bit set to &quot;1&quot; and no back-up battery is plugged in</td>
<td>Plug-in battery or set FLAGS RETENTIVE bit to &quot;0&quot;</td>
</tr>
</tbody>
</table>

### 4.2 Changing the backup battery

The backup battery can be changed with the PC in the "Run" state. (If the battery is changed with the power off, the system voltage should be briefly connected again after changing the battery to allow the PC to recognize the new status. The power can then be switched on for continuous operation).

The battery is changed in the following order:
- Remove the cover of the battery compartment
- Take out the old battery
- Insert the new battery (noting polarity)
- Replace the battery compartment cover

Only the lithium battery in the list of spare parts may be used. The battery has a backup time of at least 3 years.
4.3 Interface assignments

<table>
<thead>
<tr>
<th></th>
<th>c</th>
<th>b</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AD12</td>
<td>M</td>
<td>V_{CC}</td>
</tr>
<tr>
<td>2</td>
<td>AD0</td>
<td>AD1</td>
<td>AD2</td>
</tr>
<tr>
<td>3</td>
<td>AD3</td>
<td>AD4</td>
<td>AD5</td>
</tr>
<tr>
<td>4</td>
<td>AD6</td>
<td>AD7</td>
<td>AD8</td>
</tr>
<tr>
<td>5</td>
<td>AD9</td>
<td>AD10</td>
<td>AD11</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>RD</td>
</tr>
<tr>
<td>7</td>
<td>PGM4/WR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>D0</td>
<td>D1</td>
<td>D2</td>
</tr>
<tr>
<td>11</td>
<td>D3</td>
<td>D4</td>
<td>D5</td>
</tr>
<tr>
<td>12</td>
<td>D6</td>
<td>D7</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>CST</td>
<td>CST</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>CS2</td>
<td>BUSY</td>
<td>K4</td>
</tr>
<tr>
<td>15</td>
<td>Vpp1</td>
<td>RD</td>
<td>K5</td>
</tr>
</tbody>
</table>

Fig. 13: Assignment of interface signals to the memory submodule

Fig. 14: Assignment of interface signals to the programmer

1. Shielding/earth
2. Rec-
3. V_{PP}+5.2V
4. -
5. Zero volt reference potential
6. Driver+
7. Driver-
8. Shielding/earth
9. Rec+
10. -
11. T/20mA-(current source/receiver)
12. Zero V reference potential internal
13. R/20mA-(current source/receiver)
14. V_{PP}+5.2V
15. Zero V reference potential, internal
5. Technical specification

5.1 General data

Input voltage:
- a) 220V AC (+10%, -15%) 48...53 Hz
- b) 240V AC (+10%, -15%)

Current consumption:
- a) 230mA at 220V AC
- b) 210mA at 240V AC
  Fuse: 250mA or 500mA slow

Temperature range:
- Low temperature limit: 0°C to
- High temperature limit: 55°C
- Casing inlet air temperature: ≤55°C
- Storage temperature: -40...+70°C

Humidity rating:
- F to DIN 40040
- 95 % relative atmospheric humidity at 25°C

Degree of protection:
- IP20 to DIN 40050

Internal power supply for sensors:
- 24V DC/max. 300 mA
  Fuse: 500 mA slow
- (20 ... 30V DC) (Dimensions 6.3mm x 32 mm)

5.2 CPU/memory submodule

Processing time for one binary operation: approx. 5/µs

Operation set:

Binary operations
- Setting/resetting operations
- Timer and counter operations

Addressing in the case of the 6ES5 101-BRA11:
- 16 program blocks
- 24 program elements per PB
- 20 inputs (I0.0...I2.3)
- 12 outputs (coils) (Q0.0...Q1.3)
- 32 flags or inter- nal relays
- 16 retentive (F0.0...F1.8)
  (with backup battery only)
- 8 counters C0...C7 (range 1...32767), max. counting frequency 50 Hz
- 8 timers T0...T7 (range 10 ms...999 min)

Addressing in the case of the 6ES5 101-8RB11:
- 10 inputs (I0.0...I2.2)
- 6 outputs (Q0.0...Q1.2)
- All other values as for the 6ES5 101-BRA11

Vibration test:
- to DIN 40046, Sheet 8

<table>
<thead>
<tr>
<th>Frequency range Hz</th>
<th>Constant amplitude of deflection</th>
<th>Acceleration</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 58</td>
<td>0.075 mm</td>
<td>-</td>
</tr>
<tr>
<td>over 58 up to 500</td>
<td>-</td>
<td>1g</td>
</tr>
</tbody>
</table>

Impact test:
- 15g/11ms, trapezoidal to DIN 40046, Part 7

Creepage distances and clearances in air to VDE 0160

Dimensions: 258 mm x 167 mm x 114 mm (wxhxd)

Approx. weight: 2.7 kg

Internal program memory:
- RAM for 384 program elements: supported for at least three years if a backup battery is used

Memory submodules (plug-in):
- a) EPROM submodule
  - Storage of program with 655R programmer or on 105R PC with a programming adapter
  - Program erasure: UV lamp

- b) EEPROM submodule
  - Storage and erasure of program
  - direct on the PC with the programmer

5.1
5.3 I/Os

The inputs are galvanically isolated from the internal power supply by means of optocouplers. The signal statuses of the inputs are indicated by green LEDs; the LEDs are driven by the 24V signal voltage of the inputs. The PC has relay outputs. The relay contacts are fitted with varistors having a maximum leakage current of 1 mA. The signal statuses of the outputs are indicated by green LEDs connected in parallel with the excitation coils of the relays.

<table>
<thead>
<tr>
<th>Number of inputs</th>
<th>Rated input voltage for &quot;0&quot; signal</th>
<th>Nominal input current for &quot;1&quot; signal</th>
<th>Delay ON</th>
<th>Maximum length of separately installed lines</th>
<th>Insulation for nominal voltage tested at</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 or 10, floating</td>
<td>24V DC</td>
<td>-35V...+4.5V or input open</td>
<td>+13V...+35V</td>
<td>0.5mA</td>
<td>1.5 - 5ms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of outputs</th>
<th>Contact switching capacity</th>
<th>Service life in operations</th>
<th>Maximum switching frequency</th>
<th>Simultaneity factor</th>
<th>Insulation for nominal voltage tested at</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 or 6 relays</td>
<td>each pair of relays to common output</td>
<td>250V 1.5A resistive 250V 0.4A inductive 30V DC 2.5A resistive 30V DC 0.5A inductive</td>
<td>to AC 11 1.5 - 10^6 to DC 11 2 - 10^6</td>
<td>10 Hz resistive 2 Hz inductive</td>
<td>100%</td>
</tr>
</tbody>
</table>

1) Applies also to two-wire proximity switches (voltage: 22V...30V DC)
2) If an external power supply unit is used, a smoothing capacitor must be fitted
3) Card relays of type E V23027-B002-A402 (SIEMENS); leakage current of parallel varistor 1 mA.

SIEMENS contactors

The following contactors can be driven with the output relays:

AC contactors | DC contactors | Auxiliary contactors
---|---|---
3TJ50 | 3TC44 | 3TH80
3TB40/3TB41 | 220V AC/240V AC | 220V AC/240V AC
3TB42/3TB43 | 24V DC | 24V DC
3TB44 | 3TC48 | 3TH82
3TC52 | 220V AC/240V AC | 220V AC/240V AC
3TB46 | 3TH83 | 24V DC
3TB47 | 3TB50 | 3TJ1
3TB52 | | |

Please refer to Catalog NS2 for the technical specifications of these contactors.
6. Spare parts

<table>
<thead>
<tr>
<th>SPARE PART</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>101R programmable controller</td>
<td>6ES5 101-8RA11</td>
</tr>
<tr>
<td>with 20 inputs and 12 outputs</td>
<td></td>
</tr>
<tr>
<td>101R programmable controller</td>
<td>6ES5 101-8RB11</td>
</tr>
<tr>
<td>with 10 inputs and 6 outputs.</td>
<td></td>
</tr>
<tr>
<td>Lithium battery (for RAM backup)</td>
<td>6ES5 980-OAE11</td>
</tr>
<tr>
<td>G-type fuse-link 6.3 mm x 32 mm</td>
<td></td>
</tr>
<tr>
<td>250 mA slow (10 pcs.)</td>
<td>4 NEF 990 0636 01</td>
</tr>
<tr>
<td>500 mA slow (10 pcs.)</td>
<td>4 NEF 990 0636 02</td>
</tr>
<tr>
<td>375 memory submodule</td>
<td></td>
</tr>
<tr>
<td>EPROM</td>
<td>6ES5 375-OLA11</td>
</tr>
<tr>
<td>EEPROM (5V type)</td>
<td>6ES5 375-OLC11</td>
</tr>
<tr>
<td>UV erasing facility</td>
<td>6ES5 985-OAA11</td>
</tr>
<tr>
<td>605R programmer with</td>
<td></td>
</tr>
<tr>
<td>German labelling</td>
<td>6ES5 605-ORA11</td>
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<tr>
<td>English labelling</td>
<td>6ES5 605-ORB11</td>
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<tr>
<td>Carrying case</td>
<td>6ES5 986-OLA11</td>
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<tr>
<td>101R PC manual</td>
<td></td>
</tr>
<tr>
<td>German</td>
<td>6ES5 998-ORC11</td>
</tr>
<tr>
<td>English</td>
<td>6ES5 998-ORC21</td>
</tr>
<tr>
<td>French</td>
<td>6ES5 998-ORC31</td>
</tr>
</tbody>
</table>

Subject to change without prior notice

SIEMENS AKTIENGESELLSCHAFT

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