

\*\*\* SPARE PART\*\*\* SIMATIC C7-621, COMPACT UNIT WITH INTEGRATED COMPONENTS: S7-300 CPU, OP 3, IM 621, 16DI, 16DO, 4AI, 1AO

### Operator control and monitoring

Password protection	Yes
• Password levels	9
<b>Process images</b>	
• Number of process images	40
• Number of variables in message text, max.	8
• Entries per process image	20
<b>Operating-/fault messages</b>	
• Number of operating messages, max.	499
• Scroll operating messages, max.	50
• Number of symbol/character sets	1

### Display

Design of display	LCD backlit
dynamic objects	Input, output, input/output fields, date/time fields, symbolic input/output fields
<b>Line display</b>	
• Number of lines	2
• Number of characters per line	20
• Character size	5 mm
<b>Backlighting</b>	
• MTBF backlighting (at 25 °C)	100 000 h; about 11 years

### Control elements

<b>Keyboard fonts</b>	
• Function keys	
— Number of function keys	10
— Number of softkeys	5

### Supply voltage

Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	30.2 V
<b>Load voltage L+</b>	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V

Input current	
Current consumption, typ.	0.3 mA
Current consumption, max.	1 A
Power loss	
Power loss, typ.	8 W
Memory	
Work memory	
• integrated	32 kbyte; 10 K instructions RAM (integrated)
Load memory	
• integrated FEPRM, max.	48 kbyte
• integrated RAM, max.	48 kbyte
Backup	
• without battery	Yes; 144 bytes: Parameterizable for bit memories, counters, data
CPU processing times	
for bit operations, typ.	0.3 $\mu$ s
for bit operations, max.	0.6 $\mu$ s
for word operations, typ.	1 $\mu$ s
for fixed point arithmetic, typ.	2 $\mu$ s
for floating point arithmetic, typ.	50 $\mu$ s
for timer/counter operations, typ.	12 $\mu$ s
CPU-blocks	
DB	
• Number, max.	127; DB 0 reserved
FB	
• Number, max.	128; see instruction list
FC	
• Number, max.	128; see instruction list
OB	
• Number, max.	see instruction list
• Number of free cycle OBs	1; OB 1
• Number of process alarm OBs	1; OB 40
• Number of startup OBs	1; OB 100
• Number of asynchronous error OBs	7; OB 80, 81, 82, 85, 87, 121, 122
Nesting depth	
• per priority class	8
Counters, timers and their retentivity	
S7 counter	
• Number	64
Retentivity	
— adjustable	Yes

— lower limit	0
— upper limit	31
<b>Counting range</b>	
— lower limit	0
— upper limit	999
<b>S7 times</b>	
• Number	128
<b>Retentivity</b>	
— adjustable	Yes
— lower limit	0
— upper limit	63
<b>Time range</b>	
— lower limit	1 s
— upper limit	9 990 s
<b>Data areas and their retentivity</b>	
<b>Flag</b>	
• Number, max.	256 byte
• of which retentive without battery	0 to 1023
<b>Address area</b>	
<b>I/O address area</b>	
• Inputs	78 kbyte
• Outputs	78 kbyte
<b>Process image</b>	
• Inputs	124 byte
• Outputs	124 byte
<b>Hardware configuration</b>	
connectable programming devices/PCs	SIMATIC PG/PC, standard PC
Number of modules per system, max.	8; per ET 200M
Number of modules per DP slave interface, max.	8; 64 byte address space per DP-station
<b>Number of DP masters</b>	
• integrated	0
• via CP	1; CP 342-5
<b>Number of operable FMs and CPs (recommended)</b>	
• FM	4
• CP, PtP	2
• CP, LAN	1
<b>Expansion modules</b>	
• Analog inputs/outputs, max.	37
• Digital inputs/outputs, max.	160
• Number of expansion modules, max.	4
<b>Rack</b>	

• Number of lines, max.	1
<b>Time of day</b>	
<b>Clock</b>	
• Software clock	Yes
<b>Digital inputs</b>	
Number of digital inputs	16
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30 V
<b>Input current</b>	
• for signal "1", typ.	11.5 mA
<b>Input delay (for rated value of input voltage)</b>	
for standard inputs	
— at "0" to "1", max.	4.8 ms; typically 3 ms
<b>Cable length</b>	
• shielded, max.	1 000 m
• unshielded, max.	600 m
<b>Digital outputs</b>	
Number of digital outputs	16
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	48 V
<b>Switching capacity of the outputs</b>	
• on lamp load, max.	5 W
<b>Output voltage</b>	
• for signal "1", min.	L+ (-0.8 V)
<b>Output current</b>	
• for signal "1" rated value	0.5 A
• for signal "1" minimum load current	5 mA
• for signal "0" residual current, max.	0.5 mA
<b>Switching frequency</b>	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
<b>Total current of the outputs (per group)</b>	
all mounting positions	
— up to 20 °C, max.	4 A
— up to 40 °C, max.	2 A
<b>Cable length</b>	
• shielded, max.	1 000 m
• unshielded, max.	600 m

## Analog inputs

Number of analog inputs	4
permissible input voltage for voltage input (destruction limit), max.	30 V
permissible input current for current input (destruction limit), max.	30 mA
<b>Input ranges</b>	
• Voltage	Yes
• Current	Yes
<b>Input ranges (rated values), voltages</b>	
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	50 k $\Omega$
<b>Input ranges (rated values), currents</b>	
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	105.5 $\Omega$

## Analog outputs

Number of analog outputs	1
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	11 mA
Current output, no-load voltage, max.	15 V
Cycle time (all channels) max.	0.5 ms
<b>Output ranges, voltage</b>	
• -10 V to +10 V	Yes
<b>Output ranges, current</b>	
• -20 mA to +20 mA	Yes
<b>Load impedance (in rated range of output)</b>	
• with voltage outputs, min.	2 k $\Omega$
• with voltage outputs, capacitive load, max.	1 $\mu$ F
• with current outputs, max.	0.5 k $\Omega$
• with current outputs, inductive load, max.	1 mH
<b>Cable length</b>	
• shielded, max.	100 m

## Analog value generation for the inputs

<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	12 bit
• Conversion time (per channel)	100 $\mu$ s

## Analog value generation for the outputs

<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	12 bit
• Conversion time (per channel)	40 $\mu$ s

Settling time	
• for resistive load	0.6 ms
• for capacitive load	1 ms
• for inductive load	0.5 ms

  

Encoder	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	2 mA

  

Errors/accuracies	
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	1 %
• Current, relative to input range, (+/-)	1 %
• Voltage, relative to output range, (+/-)	1 %
• Current, relative to output range, (+/-)	1 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.9 %
• Current, relative to input range, (+/-)	0.8 %
• Voltage, relative to output range, (+/-)	0.8 %
• Current, relative to output range, (+/-)	0.9 %

  

Interfaces	
MPI	
• Cable length, max.	9 100 m; without repeaters 50 m; with 2 repeaters: 1100 m; with 10 repeaters in series: 9100 m; via fiber optic cable: 23.8 km (with star hubs or OLMs)

  

1. Interface	
Protocols	
• MPI	Yes
MPI	
• Number of nodes, max.	32; PG/PC, OP, C7, S7-300/400, M7
• Transmission rate, max.	187.5 kbit/s

  

Communication functions	
S7 communication	
• S7 extended communication	Yes; Server
Number of connections	
• overall	
— of which dynamic	4
— of which static	4

  

Interrupts/diagnostics/status information	
Diagnostics function	Yes

<b>Alarms</b>	
• Diagnostic alarm	No
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	No
<b>Potential separation digital outputs</b>	
• Potential separation digital outputs	No
<b>Potential separation analog inputs</b>	
• Potential separation analog inputs	No
<b>Potential separation analog outputs</b>	
• Potential separation analog outputs	No
<b>Isolation</b>	
Isolation tested with	500 V DC
<b>Degree and class of protection</b>	
Degree of protection acc. to EN 60529	
• IP20	Yes; Housing
• IP65	Yes; Front
<b>Standards, approvals, certificates</b>	
CSA approval	Yes
UL approval	Yes; UL 508
FM approval	Yes; FM-Standards No. 3611, 3600, 3810 Class I, Division 2, Group A, B, C, D
developed in accordance with IEC 61131	Yes
DIN/ISO 9001	Yes; Certification of production and development
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
<b>Air pressure acc. to IEC 60068-2-13</b>	
• permissible range, lower limit	795 hPa
• permissible range, upper limit	1 080 hPa
<b>Relative humidity</b>	
• Operation, min.	5 %
• Operation, max.	95 %; RH class 2 in accordance with IEC 1131-2
<b>Vibrations</b>	
• Operation, tested according to IEC 60068-2-6	Yes; IEC 60068-2-6; 10 Hz to 58 Hz; (constant amplitude 0.075 mm); 58 Hz to 500 Hz; (constant acceleration 9.8 m/s <sup>2</sup> )
<b>Shock testing</b>	
• tested according to IEC 60068-2-29	Yes; IEC 68, Part 2-29 half-sine: 100 m/s <sup>2</sup> (10 g), 16 ms, 100 shocks

## Configuration

Configuration software	
• STEP 7 Lite	Yes
• ProTool	Yes
• ProTool/Lite	Yes
• ProTool/Pro	Yes
Programming	
• Command set	see instruction list
• Nesting levels	8
• Program organization	Linear, structured
• System functions (SFC)	see instruction list
Programming language	
— SCL	Yes
Software libraries	
— Process diagnostics	Yes; S7-CPU
— Software controller	Yes; 8 loops
Know-how protection	
• User program protection/password protection	Yes
Cycle time monitoring	
• lower limit	1 ms
• upper limit	6 000 ms
• adjustable	Yes
• preset	150 ms
Languages	
Online languages	
• Number of online/runtime languages	3
Dimensions	
Width	168 mm
Height	120 mm
Depth	69 mm
Mounting cutout, width	158.5 mm
Mounting cutout, height	110.5 mm
Weights	
Weight, approx.	800 g
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