

\*\*\* SPARE PART\*\*\* SIMATIC C7-613, COMPACT UNIT WITH 4 LINE DISPLAY, KEYS AND S7-300 CPU313C WITH 24 DI, 16 DO, 5 AI, 2 AO; MICRO MEMORY CARD AND CONNECTOR SET REQUIRED



Figure similar

Supply voltage	
Rated value (DC)	
<ul style="list-style-type: none"> <li>• 24 V DC</li> </ul>	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage L+	
<ul style="list-style-type: none"> <li>• Rated value (DC)</li> <li>• permissible range, lower limit (DC)</li> <li>• permissible range, upper limit (DC)</li> </ul>	24 V 20.4 V 28.8 V
Input current	
Current consumption, typ.	150 mA; idling
Digital inputs	
<ul style="list-style-type: none"> <li>• from load voltage L+ (without load), max.</li> </ul>	70 mA
Digital outputs	
<ul style="list-style-type: none"> <li>• from load voltage L+, max.</li> </ul>	100 mA
Power loss	

Power loss, typ.	14 W
<b>Memory</b>	
<b>Work memory</b>	
• integrated	64 kbyte; For program and data
• expandable	No
<b>Load memory</b>	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
<b>Backup</b>	
• present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
<b>CPU processing times</b>	
for bit operations, typ.	0.1 $\mu$ s
for bit operations, max.	0.2 $\mu$ s
for word operations, typ.	0.2 $\mu$ s
for fixed point arithmetic, typ.	2 $\mu$ s
for floating point arithmetic, typ.	3 $\mu$ s
<b>CPU-blocks</b>	
<b>DB</b>	
• Number, max.	511; Number range: 1 to 511
• Size, max.	16 kbyte
<b>FB</b>	
• Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
<b>FC</b>	
• Number, max.	1 024; Number range: 0 to 2047
• Size, max.	16 kbyte
<b>OB</b>	
• Number, max.	see instruction list
• Size, max.	16 kbyte
• Number of free cycle OBs	1; OB 1
• Number of time alarm OBs	1; OB 10
• Number of delay alarm OBs	1; OB 20
• Number of cyclic interrupt OBs	1; OB 35
• Number of process alarm OBs	1; OB 40
• Number of startup OBs	1; OB 100
• Number of asynchronous error OBs	4; OB 80, 82, 85, 87
<b>Nesting depth</b>	
• per priority class	8
• additional within an error OB	4

## Counters, timers and their retentivity

<b>S7 counter</b>	
• Number	256
of which retentive without battery	
— can be set	Yes
— lower limit	0
— upper limit	255
Retentivity	
— adjustable	Yes
— preset	8
Counting range	
— lower limit	0
— upper limit	999
<b>IEC counter</b>	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
<b>S7 times</b>	
• Number	256
of which retentive without battery	
— adjustable	Yes
— lower limit	0
— upper limit	255
Retentivity	
— adjustable	Yes
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
<b>IEC timer</b>	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
<b>Data areas and their retentivity</b>	
<b>Flag</b>	
• Number, max.	256 byte
• Retentivity available	Yes; MB 0 to MB 255
• Retentivity preset	MB 0 to MB 15
• Number of clock memories	8; 1 memory byte
<b>Data blocks</b>	
• Number, max.	511; from DB1 to DB511

• Size, max.	16 kbyte
<b>Local data</b>	
• per priority class, max.	510 byte
<b>Address area</b>	
<b>I/O address area</b>	
• Inputs	1 kbyte
• Outputs	1 kbyte
<b>Process image</b>	
• Inputs	128 byte
• Outputs	128 byte
<b>Default addresses of the integrated channels</b>	
— Digital inputs	124.0 to 126.7
— Digital outputs	124.0 to 125.7
— Analog inputs	752 to 761
— Analog outputs	752 to 755
<b>Digital channels</b>	
• Inputs	1 016
— of which central	1 016
• Outputs	1 008
— of which central	1 008
<b>Analog channels</b>	
• Inputs	253
— of which central	253
• Outputs	250
— of which central	250
<b>Hardware configuration</b>	
<b>Number of DP masters</b>	
• via CP	2
<b>Number of operable FMs and CPs (recommended)</b>	
• FM	4
• CP, PtP	4
• CP, LAN	4
<b>Rack</b>	
• Racks, max.	1
• Modules per rack, max.	4
<b>Time of day</b>	
<b>Clock</b>	
• Hardware clock (real-time)	Yes
• retentive and synchronizable	Yes
• Backup time	6 wk; At 40 °C ambient temperature

• Deviation per day, max.	10 s
<b>Operating hours counter</b>	
• Number	1
• Number/Number range	0
• Range of values	0 to 2 <sup>31</sup> hours (when using SFC 101)
• Granularity	1 hour
• retentive	Yes; Must be restarted at each restart
<b>Clock synchronization</b>	
• supported	Yes
• to MPI, master	Yes
• to MPI, slave	Yes
• in AS, master	Yes
<b>Digital inputs</b>	
Number of digital inputs	24
• of which inputs usable for technological functions	12
Input characteristic curve in accordance with IEC 61131, type 1	Yes
<b>Number of simultaneously controllable inputs</b>	
<b>horizontal installation</b>	
— up to 40 °C, max.	24
— up to 60 °C, max.	12
<b>vertical installation</b>	
— up to 40 °C, max.	12
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30V
<b>Input current</b>	
• for signal "1", typ.	9 mA
<b>Input delay (for rated value of input voltage)</b>	
<b>for standard inputs</b>	
— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms
— Rated value	3 ms
<b>for counter/technological functions</b>	
— at "0" to "1", max.	16 µs
<b>Cable length</b>	
• shielded, max.	1 000 m; 100 m for technological functions
• unshielded, max.	600 m; For technological functions: No
<b>for technological functions</b>	
— shielded, max.	100 m
— unshielded, max.	not allowed

Digital outputs	
Number of digital outputs	16
<ul style="list-style-type: none"> <li>• of which high-speed outputs</li> </ul>	4
Short-circuit protection	Yes; Clocked electronically
<ul style="list-style-type: none"> <li>• Response threshold, typ.</li> </ul>	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
<ul style="list-style-type: none"> <li>• on lamp load, max.</li> </ul>	5 W
Load resistance range	
<ul style="list-style-type: none"> <li>• lower limit</li> </ul>	48 $\Omega$
<ul style="list-style-type: none"> <li>• upper limit</li> </ul>	4 k $\Omega$
Output voltage	
<ul style="list-style-type: none"> <li>• for signal "1", min.</li> </ul>	L+ (-0.8 V)
Output current	
<ul style="list-style-type: none"> <li>• for signal "1" rated value</li> </ul>	500 mA
<ul style="list-style-type: none"> <li>• for signal "1" permissible range, min.</li> </ul>	5 mA
<ul style="list-style-type: none"> <li>• for signal "1" permissible range, max.</li> </ul>	0.6 A
<ul style="list-style-type: none"> <li>• for signal "1" minimum load current</li> </ul>	5 mA
<ul style="list-style-type: none"> <li>• for signal "0" residual current, max.</li> </ul>	0.5 mA
Parallel switching of two outputs	
<ul style="list-style-type: none"> <li>• for uprating</li> </ul>	No
<ul style="list-style-type: none"> <li>• for redundant control of a load</li> </ul>	Yes
Switching frequency	
<ul style="list-style-type: none"> <li>• with resistive load, max.</li> </ul>	100 Hz
<ul style="list-style-type: none"> <li>• with inductive load, max.</li> </ul>	0.5 Hz
<ul style="list-style-type: none"> <li>• on lamp load, max.</li> </ul>	100 Hz
<ul style="list-style-type: none"> <li>• of the pulse outputs, with resistive load, max.</li> </ul>	2.5 kHz
Total current of the outputs (per group)	
horizontal installation	
<ul style="list-style-type: none"> <li>— up to 40 °C, max.</li> </ul>	3 A
vertical installation	
<ul style="list-style-type: none"> <li>— up to 40 °C, max.</li> </ul>	2 A
Cable length	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	1 000 m
<ul style="list-style-type: none"> <li>• unshielded, max.</li> </ul>	600 m
Analog inputs	
Number of analog inputs	
<ul style="list-style-type: none"> <li>• For voltage/current measurement</li> </ul>	4
<ul style="list-style-type: none"> <li>• For resistance/resistance thermometer measurement</li> </ul>	1

integrated channels (AI)	4+1
permissible input voltage for current input (destruction limit), max.	2.5 V; Permanent
permissible input voltage for voltage input (destruction limit), max.	30 V; Permanent
permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent
permissible input current for current input (destruction limit), max.	50 mA; Permanent
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
<b>Input ranges</b>	
• Current	Yes
• Resistance thermometer	Yes
• Resistance	Yes
<b>Input ranges (rated values), voltages</b>	
• 0 to +10 V	Yes
• Input resistance (0 to 10 V)	100 k $\Omega$
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	100 k $\Omega$
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	50 $\Omega$
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	50 $\Omega$
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	50 $\Omega$
<b>Input ranges (rated values), resistance thermometer</b>	
• Pt 100	Yes
• Input resistance (Pt 100)	10 M $\Omega$
<b>Input ranges (rated values), resistors</b>	
• No-load voltage, typ.	2.5 V
• Measuring current, typ.	1.8 to 3.3 mA
• 0 to 600 ohms	Yes
• Input resistance (0 to 600 ohms)	10 M $\Omega$
<b>Thermocouple (TC)</b>	
Temperature compensation	
— parameterizable	No
<b>Characteristic linearization</b>	
• parameterizable	Yes; by software
— for resistance thermometer	Pt 100
<b>Cable length</b>	
• shielded, max.	100 m

Analog outputs	
Number of analog outputs	2
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	17 V
Output ranges, voltage	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
• for voltage output two-wire connection	Yes; Without compensation of the line resistances
• for voltage output four-wire connection	No
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 k $\Omega$
• with voltage outputs, capacitive load, max.	0.1 $\mu$ F
• with current outputs, max.	300 $\Omega$
• with current outputs, inductive load, max.	0.1 mH
Destruction limits against externally applied voltages and currents	
• Voltages at the outputs towards MANA	16 V; Permanent
• Current, max.	50 mA; Permanent
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Measurement principle	Actual value encryption (successive approximation)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit
• Integration time, parameterizable	Yes; 2,5 / 16,6 / 20 ms
• permissible input frequency, max.	400 Hz
• Time constant of the input filter	0.38 ms
• Basic execution time of the module (all channels released)	1 ms
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit
• Conversion time (per channel)	1 ms



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

  

Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes; with external supply
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire connection	Yes; Without compensation of the line resistances
• for resistance measurement with three-wire connection	No
• for resistance measurement with four-wire connection	No
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA

  

Errors/accuracies	
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.06 %
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.1 %
Linearity error (relative to output range), (+/-)	0.15 %
Temperature error (relative to output range), (+/-)	0.01 %/K
Crosstalk between the outputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.06 %
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	1 %
• Current, relative to input range, (+/-)	1 %
• Resistance, relative to input range, (+/-)	5 %
• 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, (+/-)	0.7 %; Linearity error +/- 0.06 %
• Current, relative to input range, (+/-)	0.7 %; Linearity error +/- 0.06 %
• Resistance, relative to input range, (+/-)	3 %; Linearity error +/- 0.2%
• Resistance thermometer, relative to input range, (+/-)	3 %

• Voltage, relative to output range, (+/-)	0.7 %
• Current, relative to output range, (+/-)	0.7 %
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1 =</math> interference frequency</b>	
• Series mode interference (peak value of interference < rated value of input range), min.	30 dB
• Common mode interference, min.	40 dB

## Interfaces

### MPI

- |                      |                        |
|----------------------|------------------------|
| • Cable length, max. | 50 m; without repeater |
|----------------------|------------------------|

### 1. Interface

Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA

### Functionality

- |                             |     |
|-----------------------------|-----|
| • MPI                       | Yes |
| • PROFIBUS DP master        | No  |
| • PROFIBUS DP slave         | No  |
| • Point-to-point connection | No  |

### MPI

- |                           |              |
|---------------------------|--------------|
| • Number of connections   | 8            |
| • Transmission rate, max. | 187.5 kbit/s |

### Services

- |                               |     |
|-------------------------------|-----|
| — PG/OP communication         | Yes |
| — Routing                     | No  |
| — Global data communication   | Yes |
| — S7 basic communication      | Yes |
| — S7 communication            | Yes |
| — S7 communication, as client | No  |
| — S7 communication, as server | Yes |

## Communication functions

<b>Global data communication</b>	
• Number of GD loops, max.	4
• Number of GD packets, max.	4
• Number of GD packets, transmitter, max.	4
• Number of GD packets, receiver, max.	4
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
<b>S7 basic communication</b>	
• User data per job, max.	76 byte

• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
<b>S7 communication</b>	
• as server	Yes
• as client	Yes; Via CP and loadable FB
• User data per job, max.	180 byte
• User data per job (of which consistent), max.	64 byte
<b>S5 compatible communication</b>	
• supported	Yes; via CP and loadable FC
<b>Number of connections</b>	
• overall	8
• usable for PG communication	7
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	7
• usable for OP communication	7
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	7
• usable for S7 basic communication	4
— reserved for S7 basic communication	4
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	4
• usable for routing	No
<b>S7 message functions</b>	
Number of login stations for message functions, max.	8; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	20
<b>Test commissioning functions</b>	
Status block	Yes
Single step	Yes
Number of breakpoints	2
<b>Status/control</b>	
• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
— of which status variables, max.	30
— of which control variables, max.	14
<b>Forcing</b>	

• Forcing	Yes
<b>Diagnostic buffer</b>	
• present	Yes
• Number of entries, max.	100

<b>Integrated Functions</b>	
Number of counters	3; 3 channels (see "Technological Functions" manual)
Counting frequency (counter) max.	30 kHz
Frequency measurement	Yes
Number of frequency meters	3; 3 channels up to max. 30 kHz (see "Technological Functions" manual)
controlled positioning	No
integrated function blocks (closed-loop control)	Yes; PID controller (see "Technological Functions" manual)
PID controller	Yes
Number of pulse outputs	3; 3 channels pulse width modulation up to max. 2.5 kHz (see "Technological Functions" manual)
Limit frequency (pulse)	2.5 kHz

<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	Yes
• between the channels	No
• between the channels and backplane bus	Yes
<b>Potential separation digital outputs</b>	
• Potential separation digital outputs	Yes
• between the channels	Yes
• between the channels, in groups of	8
• between the channels and backplane bus	Yes
<b>Potential separation analog inputs</b>	
• Potential separation analog inputs	Yes; common for analog I/O
• between the channels	No
• between the channels and backplane bus	Yes
<b>Potential separation analog outputs</b>	
• Potential separation analog outputs	Yes; common for analog I/O
• between the channels	No
• between the channels and backplane bus	Yes

<b>Permissible potential difference</b>	
between different circuits	75 V DC/60 V AC
Between the inputs and MANA (UCM)	8 V DC
between MANA and M internally (UISO)	75 V DC/60 V AC

<b>Isolation</b>	
Isolation tested with	500 V DC

## Configuration

<b>Configuration software</b>	
• STEP 7	Yes; V5.2 SP1 with HW update
<b>Programming</b>	
• Command set	see instruction list
• Nesting levels	8
• System functions (SFC)	see instruction list
• System function blocks (SFB)	see instruction list
<b>Programming language</b>	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
— HiGraph®	Yes
<b>Know-how protection</b>	
• User program protection/password protection	Yes

<b>Dimensions</b>	
Width	215 mm
Height	165 mm
Depth	79.3 mm
Mounting cutout, width	202 mm
Mounting cutout, height	152 mm

<b>Weights</b>	
Weight, approx.	915 g
<b>last modified:</b>	03/24/2017