General information

Engineering with
- Programming package: STEP 7 V13 SP1 or higher

Display

with display: No

Supply voltage

Rated value (DC)
- 24 V DC: Yes
- permissible range, lower limit (DC): 20.4 V
- permissible range, upper limit (DC): 28.8 V

Load voltage L+
- Rated value (DC): 24 V
- permissible range, lower limit (DC): 5 V
- permissible range, upper limit (DC): 250 V

Input current

Current consumption (rated value): 500 mA
Current consumption, max.: 1 500 mA
Inrush current, max.: 12 A; at 28.8 V DC

Encoder supply

24 V encoder supply
- 24 V: L+ minus 4 V DC min.

Power losses

Power loss, typ.: 12 W
### Memory

<table>
<thead>
<tr>
<th>Type of memory</th>
<th>EEPROM</th>
</tr>
</thead>
</table>

**Work memory**
- Integrated: 125 kbyte
- Expandable: No

**Load memory**
- Integrated: 4 Mbyte
- Plug-in (SIMATIC Memory Card), max. with SIMATIC memory card

**Backup**
- Present: Yes; maintenance-free
- Without battery: Yes

### CPU processing times

- For bit operations, typ. 0.085 µs / instruction
- For word operations, typ. 1.7 µs / instruction
- For floating point arithmetic, typ. 2.5 µs / instruction

### CPU-blocks

- Number of blocks (total): DBs, FCs, FBs, counters and timers. The maximum number of addressable blocks ranges from 1 to 65535. There is no restriction, the entire working memory can be used

**OB**
- Number, max. Limited only by RAM for code

### Data areas and their retentivity

- Retentive data area in total (incl. times, counters, flags), max. 10 kbyte

**Flag**
- Number, max. 8 kbyte; Size of bit memory address area

**Process image**
- Inputs, adjustable: 1 kbyte
- Outputs, adjustable: 1 kbyte

### Hardware configuration

- Number of modules per system, max. 3 comm. modules, 1 signal board, 8 signal modules

### Time of day

**Clock**
- Hardware clock (real-time clock): Yes
- Deviation per day, max.: +/- 60 s/month at 25 °C
- Backup time: 480 h; Typical

### Digital inputs

- Number of digital inputs: 14; Integrated
- Of which, inputs usable for technological functions: 6; HSC (High Speed Counting)
<table>
<thead>
<tr>
<th><strong>integrated channels (DI)</strong></th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>m/p-reading</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Number of simultaneously controllable inputs</strong></td>
<td></td>
</tr>
<tr>
<td><strong>all mounting positions</strong></td>
<td></td>
</tr>
<tr>
<td>— up to 40 °C, max.</td>
<td>14</td>
</tr>
<tr>
<td><strong>Input voltage</strong></td>
<td></td>
</tr>
<tr>
<td>• Rated value (DC)</td>
<td>24 V</td>
</tr>
<tr>
<td>• for signal &quot;0&quot;</td>
<td>5 V DC at 1 mA</td>
</tr>
<tr>
<td>• for signal &quot;1&quot;</td>
<td>15 VDC at 2.5 mA</td>
</tr>
<tr>
<td><strong>Input current</strong></td>
<td></td>
</tr>
<tr>
<td>• for signal &quot;1&quot;, typ.</td>
<td>1 mA</td>
</tr>
<tr>
<td><strong>Input delay (for rated value of input voltage)</strong></td>
<td></td>
</tr>
<tr>
<td>for standard inputs</td>
<td></td>
</tr>
<tr>
<td>— Parameterizable</td>
<td>Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four</td>
</tr>
<tr>
<td>— at &quot;0&quot; to &quot;1&quot;, min.</td>
<td>0.2 ms</td>
</tr>
<tr>
<td>— at &quot;0&quot; to &quot;1&quot;, max.</td>
<td>12.8 ms</td>
</tr>
<tr>
<td>for interrupt inputs</td>
<td></td>
</tr>
<tr>
<td>— Parameterizable</td>
<td>Yes</td>
</tr>
<tr>
<td>for counter/technological functions</td>
<td></td>
</tr>
<tr>
<td>— Parameterizable</td>
<td>Yes; Single phase : 3 at 100 kHz &amp; 3 at 30 kHz, differential: 3 at 80 kHz &amp; 3 at 30 kHz</td>
</tr>
<tr>
<td><strong>Cable length</strong></td>
<td></td>
</tr>
<tr>
<td>• shielded, max.</td>
<td>500 m; 50 m for technological functions</td>
</tr>
<tr>
<td>• Unshielded, max.</td>
<td>300 m; For technological functions: No</td>
</tr>
</tbody>
</table>

**Digital outputs**

| **Number of digital outputs** | 10; Relays |
| **integrated channels (DO)** | 10 |
| **short-circuit protection** | No; to be provided externally |
| **Switching capacity of the outputs** | |
| • with resistive load, max.   | 2 A |
| • on lamp load, max.          | 30 W with DC, 200 W with AC |
| **Output delay with resistive load** | |
| • "0" to "1", max.           | 10 ms; max. |
| • "1" to "0", max.           | 10 ms; max. |
| **Switching frequency**       | |
| • of the pulse outputs, with resistive load, max. | 1 Hz |
| **Relay outputs**             | |
| • Number of relay outputs, integrated | 10 |
| • Number of relay outputs     | 10 |
| • Number of operating cycles, max. | mechanically 10 million, at rated load voltage 100,000 |
| **Cable length**              | |
### Analog inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of analog inputs</td>
<td>2</td>
</tr>
<tr>
<td>Integrated channels (AI)</td>
<td>2; 0 to 10 V</td>
</tr>
<tr>
<td>Input ranges</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>Yes</td>
</tr>
<tr>
<td>Input ranges (rated values), voltages</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>Yes</td>
</tr>
<tr>
<td>Input resistance (0 to 10 V)</td>
<td>≥100k ohms</td>
</tr>
<tr>
<td>Cable length</td>
<td></td>
</tr>
<tr>
<td>shielded, max.</td>
<td>100 m; twisted and shielded</td>
</tr>
</tbody>
</table>

### Analog outputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of analog outputs</td>
<td>2</td>
</tr>
<tr>
<td>Integrated channels (AO)</td>
<td>2; 0 to 20 mA</td>
</tr>
<tr>
<td>Output ranges, current</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>Yes</td>
</tr>
<tr>
<td>Cable length</td>
<td></td>
</tr>
<tr>
<td>shielded, max.</td>
<td>100 m; shielded, twisted pair</td>
</tr>
</tbody>
</table>

### Analog value creation

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution with overrange (bit including sign), max.</td>
<td>10 bit</td>
</tr>
<tr>
<td>Integration time, parameterizable</td>
<td>Yes</td>
</tr>
<tr>
<td>Conversion time (per channel)</td>
<td>625 µs</td>
</tr>
</tbody>
</table>

### Encoder

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectable encoders</td>
<td></td>
</tr>
<tr>
<td>2-wire sensor</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 1st interface

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface type</td>
<td>PROFINET</td>
</tr>
<tr>
<td>Physics</td>
<td>Ethernet</td>
</tr>
<tr>
<td>Isolated</td>
<td>Yes</td>
</tr>
<tr>
<td>Automatic detection of transmission speed</td>
<td>Yes</td>
</tr>
<tr>
<td>Autonegotiation</td>
<td>Yes</td>
</tr>
<tr>
<td>Autocrossing</td>
<td>Yes</td>
</tr>
<tr>
<td>Functionality</td>
<td></td>
</tr>
<tr>
<td>PROFINET IO Device</td>
<td>Yes</td>
</tr>
<tr>
<td>PROFINET IO Controller</td>
<td>Yes</td>
</tr>
<tr>
<td>PROFINET IO Controller</td>
<td></td>
</tr>
<tr>
<td>Transmission rate, max.</td>
<td>100 Mbit/s</td>
</tr>
</tbody>
</table>
### Number of connectable IO devices, max.
16

### Prioritized startup
- Number of IO Devices, max.
16

### PROFINET IO Device

#### Services
- Shared device
Yes
- Number of IO controllers with shared device, max.
2

#### Communication functions

##### S7 communication
- supported
Yes
- as server
Yes
- As client
Yes

##### Open IE communication
- TCP/IP
Yes
- ISO-on-TCP (RFC1006)
Yes
- UDP
Yes

##### Web server
- supported
Yes
- User-defined websites
Yes

##### Number of connections
- overall
16; dynamically

#### Test commissioning functions

##### Status/control
- Status/control variable
Yes
- Variables
Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters

##### Forcing
- Forcing
Yes

##### Diagnostic buffer
- present
Yes

##### Traces
- Number of configurable Traces
2; Up to 512 KB of data per trace are possible

#### Integrated Functions

##### Number of counters
6

##### Counter frequency (counter) max.
100 kHz

##### Frequency meter
Yes

##### controlled positioning
Yes

##### PID controller
Yes

##### Number of alarm inputs
4

### Galvanic isolation

6ES7215-1HG40-0XB0

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12.03.2015
### Galvanic isolation digital inputs
- Galvanic isolation digital inputs
- between the channels, in groups of 1

### Galvanic isolation digital outputs
- Galvanic isolation digital outputs
- between the channels, in groups of 2

### Permissible potential difference
- between different circuits: 500 V DC between 24 V DC and 5 V DC

### EMC
#### Interference immunity against discharge of static electricity
- Interference immunity against discharge of static electricity acc. to IEC 61000-4-2: Yes
- Test voltage at air discharge: 8 kV
- Test voltage at contact discharge: 6 kV

#### Interference immunity to cable-borne interference
- Interference immunity on supply lines acc. to IEC 61000-4-4: Yes
- Interference immunity on signal lines acc. to IEC 61000-4-4: Yes

#### Surge immunity
- on the supply lines acc. to IEC 61000-4-5: Yes

#### Immunity against conducted interference induced by high-frequency fields
- Interference immunity against high-frequency radiation acc. to IEC 61000-4-6: Yes

#### Emission of radio interference acc. to EN 55 011
- Limit class A, for use in industrial areas: Yes; Group 1
- Limit class B, for use in residential areas: Yes; When appropriate measures are used to ensure compliance with the limits for Class B according to EN 55011

### Degree and class of protection
- Degree of protection to EN 60529
  - IP20: Yes

### Standards, approvals, certificates
- CE mark: Yes
- UL approval: Yes
- cULus: Yes
- RCM (formerly C-TICK): Yes
- FM approval: Yes
- Marine approval: Yes

### Ambient conditions

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### Free fall
- Drop height, max. (in packaging): 0.3 m; five times, in dispatch package

### Ambient temperature in operation
- **Min.**
- **max.**
- **horizontal installation, min.**
- **horizontal installation, max.**
- **vertical installation, min.**
- **vertical installation, max.**

### Storage/transport temperature
- **Min.**
- **max.**

### Air pressure acc. to IEC 60068-2-13
- **Storage/transport, min.**
- **Storage/transport, max.**
- **Permissible operating height**

### Relative humidity
- **Operation, max.**
- **Permissible range (without condensation) at 25 °C**

### Vibrations
- **Vibrations**
- **Operation, checked according to IEC 60068-2-6**

### Shock test
- **checked according to IEC 60068-2-27**

### Pollutant concentrations
- **SO2 at RH < 60% without condensation**

### Programming
- **Programming language**
- **LAD**
- **FBD**
- **SCL**

### Cycle time monitoring
- **can be set**

### Dimensions
- **Width**: 130 mm
- **Height**: 100 mm
- **Depth**: 75 mm
<table>
<thead>
<tr>
<th>Weights</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, approx.</td>
<td>585 g</td>
</tr>
<tr>
<td>last modified:</td>
<td>12.03.2015</td>
</tr>
</tbody>
</table>