

SIMOTION Drive-based Control Unit D410-2 DP/PN; programmable single-axis motion controller with multi-axis option; interfaces: 5 DI, 8 DI/DO, 3 F-DI, 1 F-DO, 1 AI, 1 encoder, 1 DRIVE-CLiQ, 1 PROFIBUS, 2 PROFINET ports, 1 ethernet Note: requires at least SCOUT/firmware V4.3 SP1 HF3



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|--------------------------------------|---|
| Article number | |
| Product brand name | SIMOTION |
| Product type designation | D410-2 DP/PN |
| Version of the motion control system | Single-axis system with multi-axis option |

| PLC and motion control performance | |
|--|--|
| Number of axes / maximum | 8 |
| Minimum PROFIBUS cycle clock | 1 ms |
| Minimum PROFINET send cycle clock | 0.25 ms |
| Minimum interpolator cycle clock | 0.5 ms |
| Minimum servo cycle clock | 0.5 ms |
| <ul style="list-style-type: none"> note | 1 ms when using the TO axis and the integrated closed-loop drive control |

| Integrated drive control | |
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| Maximum number of axes for integrated drive control | |
| <ul style="list-style-type: none"> servo | 1 |
| <ul style="list-style-type: none"> vector | 1 |
| <ul style="list-style-type: none"> V/f | 1 |
| <ul style="list-style-type: none"> note | Alternative control modes; drive control based on SINAMICS S120 CU310-2, firmware version V4.x |

| Memory | |
|--|-----------|
| RAM (work memory) | 96 Mbyte |
| Additional RAM work memory for Java applications | 20 Mbyte |
| RAM disk (load memory) | 47 Mbyte |
| Retentive memory | 108 kbyte |
| Persistent memory (user data on CF) | 300 Mbyte |

| Communication | |
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| Interfaces | |
| <ul style="list-style-type: none"> • DRIVE-CLiQ | 1 |
| <ul style="list-style-type: none"> • Industrial Ethernet | 1 |
| <ul style="list-style-type: none"> • PROFIBUS — note | 1 Equidistant and isochronous; Can be configured as master or slave |
| <ul style="list-style-type: none"> • PROFINET — note | 1 Interface with 2 ports - supports PROFINET IO with IRT and RT - configurable as PROFINET IO controller and/or device - supports media redundancy (MRP and MRPD) |

| General technical data | |
|---|--|
| Fan | Integrated |
| DC supply voltage | |
| <ul style="list-style-type: none"> • rated value | 24 V |
| <ul style="list-style-type: none"> • minimum | 20.4 V |
| <ul style="list-style-type: none"> • maximum | 28.8 V |
| Consumed current / typical | 800 mA |
| <ul style="list-style-type: none"> • Note | with no load on inputs/outputs, no 24 V supply via DRIVE-CLiQ and PROFIBUS interface |
| Making current, typ. | 3 A |
| Power loss [W] / typical | 20 W |
| Ambient temperature, during | |
| <ul style="list-style-type: none"> • long-term storage | -25 ... +55 °C |
| <ul style="list-style-type: none"> • transport | -40 ... +70 °C |
| <ul style="list-style-type: none"> • operation — note | 0 ... 55 °C Maximum installation altitude 4000 m (13124 ft) above sea level. Above an altitude of 2000 m (6562 ft), the maximum ambient temperature decreases by 7 °C (12.6 °F) per 1000 m (3281 ft). |
| Relative humidity | |
| <ul style="list-style-type: none"> • during operation | 5 ... 95 % |
| <ul style="list-style-type: none"> • without condensation, tested acc. to IEC 60068-2-38 | Wert fehlt |
| Air pressure | 620 ... 1 060 hPa |
| Degree of protection | IP20 |
| Height | 190.7 mm |
| Width | 73 mm |

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|--|---|
| Depth | 74.4 mm |
| Net weight | 830 g |
| Digital inputs | |
| Number of digital inputs | 11 |
| Digital inputs / note | of which: 5 DI and 3 F-DI (= 6 DI) |
| DC input voltage | |
| • rated value | 24 V |
| • for signal "1" | 15 ... 30 V |
| • for signal "0" | -3 ... +5 V |
| Electrical isolation | Yes |
| Current consumption for "1" signal level, typ. | 3.5 mA |
| Input delay time for | |
| • signal "0" → "1", typ. | 50 µs |
| • signal "1" → "0", typ. | 150 µs |
| Digital inputs/outputs | |
| Number of digital I/Os | 8 |
| Parameterization possibility of the digital I/Os | can be parameterized - as DI - as DO - as probe input (max. 8) - as cam output (max. 8) |
| If used as an input | |
| DC input voltage | |
| • rated value | 24 V |
| • for signal "1" | 15 ... 30 V |
| • for signal "0" | -3 ... +5 V |
| Electrical isolation | No |
| Current consumption for "1" signal level, typ. | 3.5 mA |
| Input delay time for | |
| • signal "0" → "1", typ. | 5 µs |
| • signal "1" → "0", typ. | 50 µs |
| Measuring input / reproducibility | 5 µs |
| • note | typical value |
| Measuring input / resolution | 1 µs |
| If used as an output | |
| Load voltage | |
| • rated value | 24 V |
| • minimum | 20.4 V |
| • maximum | 28.8 V |
| Electrical isolation | No |
| Current carrying capacity for each output, max. | 500 mA |
| Leakage current, max. | 2 mA |
| Output delay for | |
| • signal "0" → "1", typ. | 150 µs |

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| <ul style="list-style-type: none"> • signal "0" → "1", max. • signal "1" → "0", typ. • signal "1" → "0", max. — note | 400 μs 75 μs 100 μs Data for Vcc = 24 V; load 48 Ohm; "1" = 90 % VOut, "0" = 10 % VOut |
| Cam output <ul style="list-style-type: none"> • reproducibility — note • resolution — note | 125 μs typical value 125 μs typical value |
| Switching frequency of the outputs for <ul style="list-style-type: none"> • resistive load, max. • inductive load, max. • lamp load, max. | 100 Hz 0.5 Hz 10 Hz |
| Short-circuit protection | Yes |

Digital outputs

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|--|---|
| Number of digital outputs | 1 |
| Parameterization possibility of the digital outputs | can be parameterized as F-DO or DO |
| Load voltage <ul style="list-style-type: none"> • rated value • minimum • maximum | 24 V 20.4 V 28.8 V |
| Electrical isolation | Yes |
| Current carrying capacity for each output, max. | 500 mA |
| Leakage current, max. | 2 mA |
| Output delay for <ul style="list-style-type: none"> • signal "0" → "1", typ. • signal "0" → "1", max. • signal "1" → "0", typ. • signal "1" → "0", max. — note | 150 μs 400 μs 75 μs 100 μs Data for Vcc = 24 V; load 48 Ohm; "1" = 90 % VOut, "0" = 10 % VOut |
| Short-circuit protection | Yes |

Analog inputs

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| Number of analog inputs | 1 |
| If used as an voltage input | |
| Input voltage | -10 ... +10 V |
| Resolution <ul style="list-style-type: none"> • note | 12 bit +sign |
| Input resistance (Ri) | 100 kΩ |

If used as an current input

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| Input current | -20 ... +20 mA |
| Resolution | 11 bit |
| • Note | + sign |
| Input resistance (Ri) | 250 Ω |

Onboard encoder interface

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| Encoder interface | optional incremental encoder TTL, incremental encoder HTL or absolute encoder SSI without incremental signals TTL/HTL |
| Encoder supply for | |
| • 24 VDC | 0.35 A |
| • 5 VDC | 0.35 A |
| Limiting frequency, max. | 500 kHz |
| SSI baud rate | 100 ... 1 000 |
| Resolution of absolute position SSI | 30 bit |
| Cable length for | |
| • TTL incremental encoder, max. | 100 m |
| • HTL incremental encoder for | |
| — unipolar signals, max. | 100 m |
| — bipolar signals, max. | 300 m |
| — note | TTL only bipolar signals; for bipolar signals, the signal lines must be twisted in pairs and shielded |
| • SSI absolute encoder, max. | 100 m |
| — note | max. cable length depends on the baud rate |

Additional technical data

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| Design of the sensor / to detect the ambient temperature / connectable | KTY84-130, PT1000 or PTC |
| Back-up of non-volatile data | |
| • of retentive data | unlimited buffer duration |
| • of real-time clock, min. | 5 d |
| • note | Data buffering is maintenance-free |
| Approvals | |
| • USA | cULus |
| • Canada | cULus |
| • Australia | RCM (formerly C-Tick) |
| • Korea | KCC |
| • Russia, Belarus and Kazakhstan | EAC |