SIEMENS

## Data sheet 6DD1607-0CA1



*** spare part *** SIMATIC S7-400, EXM 438-1 I/O extension for FM 458 4x analog outputs 16-bit EXM 438-1 not spare part-compatible for EXM438

| | |
|---|---|
| **Supply voltage** | |
| Rated value (DC) | |
| ● 5 V DC | Yes |
| ● 24 V DC | Yes; to be set up externally |
| **Input current** | |
| Current consumption, typ. | 1.5 A |
| **Encoder supply** | |
| Type of output voltage | about 14 V (non-isolated) |
| Short-circuit protection | Yes; Electronic |
| Output current | |
| ● Rated value | 100 mA |
| **Power loss** | |
| Power loss, typ. | 7.5 W |
| **Digital inputs** | |
| Number of digital inputs | 16 |
| Input voltage | |
| ● Rated value (DC) | 24 V |
| ● for signal "0" | -1 to +6 V or input open |
| ● for signal "1" | +13 to +33V |
| Input current | |
| ● for signal "0", max. (permissible quiescent current) | 0 mA |
| ● for signal "1", typ. | 3 mA |
| Input delay (for rated value of input voltage) | |
| for standard inputs | |
| — at "0" to "1", max. | 200 µs |
| **Digital outputs** | |
| Number of digital outputs | 8 |
| Short-circuit protection | Yes; electronic/thermal |
| ● Response threshold, typ. | 250 mA |
| Limitation of inductive shutdown voltage to | Supply voltage +1 V |
| Output voltage | |
| ● for signal "0", max. | 3 V |
| ● for signal "1", max. | Supply voltage -2.5 V |
| Output current | |
| ● for signal "1" rated value | 50 mA |
| ● for signal "1" permissible range for 0 to 40 °C, min. | 100 mA |
| ● for signal "0" residual current, max. | 20 µA |
| ● Total switching current | 80% at 50 °C all outputs 50 mA |
| Output delay with resistive load | |


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| | |
|---|---|
| ● "0" to "1", max. | 15 µs |
| **Analog inputs** | |
| Number of analog inputs | 5; Differential inputs |
| Input ranges (rated values), voltages | |
| ● -10 V to +10 V | Yes; -10 V: ±4 LSB; to +10 V: ±4 LSB (1 LSB = 4.88 mV) |
| — Input resistance (-10 V to +10 V) | 470 kΩ |
| **Analog outputs** | |
| Number of analog outputs | 8; 4 outputs 16 bit; 4 outputs12 bit |
| Voltage output, short-circuit protection | Yes; relative to frame |
| Voltage output, short-circuit current, max. | 16 bit: 27 mA; 12 bit: 100 mA |
| Output ranges, voltage | |
| ● -10 V to +10 V | Yes |
| **Analog value generation for the inputs** | |
| Integration and conversion time/resolution per channel | |
| ● Resolution with overrange (bit including sign), max. | 12 bit |
| ● Conversion time (per channel) | 45 µs |
| **Analog value generation for the outputs** | |
| Integration and conversion time/resolution per channel | |
| ● Resolution with overrange (bit including sign), max. | 4 AO: 16 bit, 4 AO: 12 bit |
| ● Conversion time (per channel) | 4 AO (16 bit): 2 µs; 4 AO (12 bit): 4 µs |
| **Encoder** | |
| Number of connectable encoders, max. | 12; 8 incremental encoders (synchronizable), 4 absolute encoders |
| Connectable encoders | |
| ● Incremental encoder (symmetrical) | Yes |
| ● Incremental encoder (asymmetrical) | Yes |
| ● Absolute encoder (SSI) | Yes; Single or multiturn encoder with SSI (synchronous serial) or EnDat interface |
| Encoder signals, incremental encoder (symmetrical) | |
| ● Trace mark signals | 1) for tracks A and B (90° out of phase), poss. with zero pulse N; 2) for separate forward and backward track |
| ● Input voltage | With 0 signal: -5 to 0 V; with 1 signal: +3 to +5 V; permissible input voltage range: differential voltage -5 to +5 V; max. input current: 15 mA (important: not limited on module side!) |
| Encoder signals, incremental encoder (asymmetrical) | |
| ● Trace mark signals | Track A and B (phase-shifted by 90 degrees), possibly with zero pulse N |
| ● Input voltage | with 0 signal: -30 to +4 V (at 15 mA load); with 1 signal: +8 to 30 V (at 15 mA load); permissible input voltage range: differential voltage -30 to +30 V |
| Encoder signals, absolute encoder (SSI) | |
| ● Input signal | 5 V acc. to RS 422 |
| ● Data signal | Dual-, Gray-, Gray-Excess-Code |
| ● Clock frequency, max. | 2 MHz; 100 kHz to 2 MHz (depending on cable length) |
| **Potential separation** | |
| Potential separation digital inputs | |
| ● Potential separation digital inputs | No |
| Potential separation digital outputs | |
| ● Potential separation digital outputs | No |
| Potential separation analog inputs | |
| ● Potential separation analog inputs | No |
| Potential separation analog outputs | |
| ● Potential separation analog outputs | No |
| **Dimensions** | |
| Width | 24 mm |
| Height | 290 mm |
| Depth | 210 mm |
| **Weights** | |
| Weight, approx. | 1 kg |
| **Classifications** | |

| | Version | Classification |
|---|---|---|
| eClass | 16 | 27-24-22-05 |


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| | | |
|---|---|---|
| eClass | 14 | 27-24-22-05 |
| eClass | 12 | 27-24-22-05 |
| eClass | 9.1 | 27-24-22-05 |
| eClass | 9 | 27-24-22-05 |
| eClass | 8 | 27-24-22-05 |
| eClass | 7.1 | 27-24-22-05 |
| eClass | 6 | 27-24-22-05 |
| ETIM | 10 | EC001422 |
| ETIM | 9 | EC001422 |
| ETIM | 8 | EC001422 |
| ETIM | 7 | EC001422 |
| IDEA | 4 | 3567 |
| UNSPSC | 15 | 32-15-17-05 |

## Approvals / Certificates

### General Product Approval





Miscellaneous







| General Product Approval | EMV | For use in hazardous locations |
|---|---|---|

China RoHS












| For use in hazardous locations | Maritime application |
|---|---|

Miscellaneous



CCC-Ex



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